Note inst. in remarks column

Test scheet : CUM Edition : 07.93 : 09.04.92 replaces Calibrating oil : ISO 4113

Injection pump : VE4/12F110**0**R378-8 Type number : 0 460 424 081

Customer-specific information Customer : CDC

Engine : 4 BT

Power **YW: 67** 1/min: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating oil °C return temp.

with thermometer : 40.0...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0,30...0,40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

Pressure bar: 250.00...253,00

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,8

mm: +0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 900 Speed

Setting value mm: 2,3...2,7

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 900 Speed

Setting value bar: 4,1...4,7

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 900

Del. quantity cm3/

1000s.: 68,0...69.0

Shutoff

electromagnet Volt: 12 cm3/: 4,0 Dispersion

1000s.: (4,5)

Low-idle speed regulation

1/min: 475 Speed

Del. quantity cm3/

1000s.: 10,5...16,5

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5,5

1000s.: (7,0)

Full-load speed regulation

1/min: 1175 Speed

Del. quantity cm3/

1000s.: 32,5...37,5

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed Del. quantity cm3/: -

mind 1000s.: 65,0

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

TD travel mm: 1,3...2,1 mm: (1,0...2,4) electromagnet Volt: 12

2nd speed 1/min: 900

Del. quantity cm3/: 65,5...68,5 1000s.: (64,0...70,0) 5th speed 1/min: 900 mm: 2,3...2,7 mm: (1,8...3,2) TD travel Shutoff electromagnet Volt: 12 3rd speed 1/min: 1100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 68,0...69,0 1000s.: (65,5...71,5) 6th speed 1/min: 750 mm: 3,4...4,1 mm: (3,0...4,4) TD travel Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 70,0...74,0 1000S:: (68,0...76,0) 1/min: 500 1st speed Supply-pump 1/min: 500 bar: 2,3...2,9 pressure 7th speed Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 70,0...78,0 1000S.: (68,0...80,0) electromagnet Volt: 12 2nd speed 1/min: 900 Supply-pump bar: 4,1...4,7 pressure Shutoff Mech. shutoff: electromagnet Volt: 12 Mech. Abstellung: 1/min: 1100 3rd speed Supply-pump 1st speed 1/min: 1100 Del. quantity cm3/: 0,0...3,0 pressure bar: 4,9...5,5 Shutoff 1000s.: electromagnet Volt: 12 Shutoff electromagnet volt: 12 Overlow quantity at overflow valve: Electr. shutoff: 1st speed 1/min: 500 Shutoff 1/min: 475 1st speed Del. quantity cm3/: 0,0...3,0 electromagnet Volt: 12 Overflow : 41...83 Shutoff quantity cm3/10s: (26...98) electromagnet volt: -1/min: 1100 2nd speed Shutoff Idle delivery: electromagnet Volt: 12 Overflow : 55...138 1st speed 1/min: 475 cm3/10s: (40...154) Shutoff quantity Delivery-quant. and breakaway char.: 1/min: 1230 1nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,0...3,0 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,0...3,0 1000s.: -1000s.: -2nd speed 1/min: 1175 Automatic starting fuel delivery: Shutoff electromagnet Volt: 12
Del. quantity cm3/: 32,5...37,5
1000s.: (30,0...40,0)
3rd speed 1/min: 1160 1st speed 1/min: 130 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 75,0...125,0 Shutoff 1000s.: electromagnet Volt: 12 Del. quantity cm3/: 37,0...71,0 1000s.: -2nd speed 1/min: 240 Shutoff 1/min: 1100 4th speed electromagnet Volt: 12 Del. quantity cm3/: 40,0...80,0 Shutoff electromagnet Volt: 12 1000s.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K______

KF mm: 5,0...5,4 MS mm: 1,1...1,5 SVS max. mm: 3,2

SVS max. mm: 3,2 Ya mm: 34.8...38.8 Yb mm: 40.7...46.3

Remarks:

: C.D.C. # 391 9846

Overflow restriction 0.55 mm - Part No. ..303

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Note inst. in remarks column

Test scheet : CUM **Fdition** : 07.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R173-10 Type number : 0 460 426 113

Customer Part-No. :

Customer-specific information

Oustomer

: CASE

Engine

: 6 BT-5.9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

Pressure bar: 250.00...253.00

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing device travel

1/min: 750 Speed

Setting value mm: 2.60...3.00

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 750 Speed

Setting value bar: 4.90...5.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 750 Speed

Del. quantity cm3/

1000s.: 58.50...59.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0

1000s.: (4.5)

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/ 1000s.: 8.00...12.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.0

1000s.: (5.5)

Full-load speed regulation

Speed 1/min: 1180

Del. quantity cm3/

1000s.: 15.00...55.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 35.00...85.00

1000s.: 35.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100

mm: 4.80...5.60 TD travel

mm: (4.50...5.90)

Shutoff

electromagnet Volt: 12 3rd speed 1/min: 750

TD travel mm: 2.60...3.00 Shutoff mn: (2.10...3.50)Shutoff electromagnet Volt: 12 4th speed 1/min: 500 TD travel mm: 0.60...1.40 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 57.00...60.00
1000S.: (55.50...61.50)
12th speed 1/min: 750 mn: (0.30...1.70)Shutoff electromagnet Volt: 12 12th speed Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 58.50...59.50 1000S.: (56.00...62.00) 1st speed 1/min: 500 Supply-pump pressure bar: 3.80...4.40 Mech. shutoff: Mech. Abstellung: Shutoff electromagnet Volt: 12 2nd speed 1/min: 750 Supply-pump 1st speed 1/min: 1100 Del. quantity cm3/: 0.00...3.00 bar: 4.90...5.50 pressure Shutoff 1000s.: (0.00...3.00) electromagnet Volt: 12 Shutoff 1/min: 1100 3rd speed electromagnet volt: 12 Supply-pump bar: 6.40...7.00 pressure Electr. shutoff: Shutoff electromagnet Volt: 12 1/min: 400 1st speed Del. quantity cm3/: 0.00...3.00 Overlow quantity at overflow valve: 1000s.: (0.00...3.00) Shutoff 1st speed 1/min: 500 electromagnet volt: -Shutoff electromagnet Volt: 12 Idle delivery: : 41.70...83.40 cm3/10s: (26.70...98.40) 1st speed 1/min: 400 quantity 1/min: 1100 2nd speed Shutoff Shutoff electromagnet Volt: 12 : 55.60...139.00 Overflow cm3/10s: (40.60...154.00) 1000\$.: (7.0) Delivery-quant. and breakaway char.: 1/min: 450 2nd speed Shutoff electromagnet Volt: 12 2nd speed 1/min: 1210 Del. quantity cm3/: 0.00...4.00 1000s.: (0.00...4.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 Automatic starting fuel delivery: 1000s.: (0.00...3.00) 1/min: 1180 3rd speed 1st speed 1/min: 220 Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...95.00 1000s.: (45.00...95.00) electromagnet Volt: 12 Del. quantity cm3/: 15.00...55.00 1000s.: (15.00...55.00) 1/min: 1160 5th speed Shutoff 1/min: 420 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 35.00...85.00

1000s.: (35.00...85.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: -KF mm: 5.2...5.6 MS rm: 1.0...1.4 SVS max. mm: 4.5

Ya mm: 34.8...38.8 mm: 40.2...45.8 Yb

Remarks:

: C.D.C. # 391 2113

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Note inst. in remarks column

Test scheet : CUM

Edition : 30.10.91 replaces : 20.10.89 Calibrating oil : ISO-4113

Injection pump : VE6/12F1150R373-1 Type number : 0 460 426 144

Customer Part-No. :

Customer-specific information

Customer : CDC

Engine : 6 BTA-5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

Pressure bar: 250.00...253.00

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +0.02(0.06)

Outlet : D

Injection pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750 Charge press. hPa: 1000

Setting value mm: 1.60...2.00

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750 Charge press hPa: 1000

Setting value bar: 3.30...3.90

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: **8**2.50...83.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500

Del. quantity cm3/

1000s.: 67.50...68.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400

Del. quantity cm3/

1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 10005.: (7.0)

Full-load speed regulation

Speed 1/min: 1185 Charge press hPa: 1000

Del. quantity cm3/

1000s.: 64.00...70.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 70.00...130.00

mind 1000s.: 70.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses Timing-device characteristic: 1nd speed 1/min: 700* Charge-air pressure-setting 2nd speed 1/min: 1150 hPa: 400 point hPa: 1000 mm: 2.80...3.60 Charge press Shutoff TD travel electromagnet Volt: 12 mm: (2.50...3.90) Del. quantity cm3/: 77.50...78.50 1000s.: (73.50...82.50) Shutoff electromagnet Volt: 12 1/min: 1285 2nd speed 1/min: 750 3rd speed Charge press. hPa: 1000 hPa: 1000 mm: 1.60...2.00 Shutoff Charge press TD travel electromagnet Volt: 12 mm: (1.10...2.50) Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 12 4th speed 1/min: 600 1/min: 1215 3rd speed Charge press. hPa: 1000 hPa: 1000 Shutoff Charge press mm: 0.50...1.30 electromagnet Volt: 12 Del. quantity cm3/: 15.00...55.00 1000s.: (15.00...55.00) TD travel mm: (0.20...1.60) Shutoff 1/min: 1185 electromagnet Volt: 12 5th speed Charge press. hPa: 1000 Shutoff Supply-pump pressure characteristic: electromagnet Volt: 12
Del. quantity cm3/: 64.00...70.00
1000s.: (61.00...73.00) 1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump 1/min: 1150 9th speed pressure bar: 2.60...3.20 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 76.00...79.00 1000s.: (74.50...80.50) electromagnet Volt: 12 2nd speed 1/min: 750 Charge press. hPa: 1000 Supply-pump 1/min: 900 10th speed pressure bar: 3.30...3.90 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 81.00...84.00 1000S.: (79.50...85.50) 12th speed 1/min: 750 1/min: 1150 3rd speed Charge press. hPa: 1000 Supply-pump pressure bar: 4.90...5.50 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quyntity cm3/: 82.50...83.50 1000s.: (80.00...86.00) Overlow quantity at overflow valve: 1/min: 500 18th speed 1st speed 1/min: 500 Charge press. hPa: -Charge press. hPa: -Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 67.50...68.50 electromagnet Volt: 12 : 41.70...83.40 1000s.: (63.50...72.50) Overflow cm3/10s: (26.70...98.40) 1/min: 1150 quantity 2nd speed Mech. shutoff: Charge press. hPa: 1000 Shutoff Mech. Abstellung: electromagnet Volt: 12 1st speed 1/min: 1150 Overflow : 55.60...139.00 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) quantity cm3/10s: (40.60...154.00)

Shutoff electromagnet volt: 12 Electr. shutoff: 1st speed 1/min: 375 Charge press. hPa: -Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 9.00...13.00 1000s.: (6.00...16.00) cm3/: 5.5 Dispersion 1000s.: (7.0) 1/min: 525 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 280 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 75.00...125.00 1000s.: (75.00...125.00) 2nd speed 1/min: 440 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 50.00...80.00 1000s.: (50.00...80.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 70.00...130.00 1000s.: (70.00...130.00) Shutoff electromagnet: Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: KF mm: 5.2...5.6
MS mm: 1.2...1.6
SVS max. mm: 2.7

Ya mm: 34.8...38.8 Yb mm: 42.7...48.3

Remarks:

: C.D.C. # 391 6894

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Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor—head end

Note inst. in remarks column

Test scheet : CUM Edition : 07.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F1150R373-1 Type number : 0 460 426 144

Customer Part-No.: 391 9004

Customer-specific information

Customer : CDC

Engine : 6 BTA-5.9 IND.

KW: 131 Power 1/min: 2300 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...43.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar: 250.00...253.00 Pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

mm: 0.3 Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +-0.02(0.06)

Outlet. : D

Injection pump setting values Test specifications in parentheses Timing-device travel

Speed 1/min: 750

Charge press. hPa: 1000 Setting value mm: 1.60...2.00

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 750 Speed hPa: 1000 Charge press

Setting value bar: 3.30...3.90

electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 82.50...83.50

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4.0 1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500

Del. quantity cm3/

1000s.: 67.50...68.50

Shutoff

electromagnet Volt: 24

Low-idle speed regulation

1/min: 375 Speed

Del. quantity cm3/

1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1200 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 64.00...70.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100

Del. quantity cm3/: 70.00...130.00

1000s.: 70.00 mind

Shutoff Overflow : 55.60...139.00 electromagnet Volt: 24 quantity cm3/10s: (40.60...154.00) Inspection pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses Timing device characteristic: 1/min: 700* 1nd speed Charge-air pressure-setting 2nd speed 1/min: 1150 hPa: 400 point hPa: 1000 Charge press Shutoff electromagnet Volt: 24
Del. quantity cm3/: 77.50...78.50
1000s.: (73.50...82.50)
2nd speed 1/min: 1300 TD travel mm: 2.80...3.60 mm: (2.50...3.90) Shutoff electromagnet Volt: 24 1/min: 750 3rd speed Charge press. hPa: 1000 hPa: 1000 Charge press Shutoff TD travel mn: 1.60...2.00 electromagnet Volt: 24 mm: (1.10...2.50) Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 24 4th speed 1/min: 600 1/min: 1230 3rd speed Charge press. hPa: 1000 Charge press hPa: 1000 Shutoff TD travel mm: 0.50...1.30 mm: (0.20...1.60) Shutoff electromagnet Volt: 24 Charge press. hPa: 1000 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 24 1/min: 500 Del. quantity cm3/: 64.00...70.00 1st speed Charge press. hPa: 1000 1000s.: (61.00...73.00) 1/min: 1150 Supply-pump 9th speed bar: 2.60...3.20 pressure Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 24 electromagnet Volt: 24 1/min: 750 Del. quantity cm3/: 76.00...79.00 1000s.: (74.50...80.50) 2nd speed Charge press. hPa: 1000 1/min: 900 Supply-pump 10th speed pressure bar: 3.30...3.90 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 24 3rd speed 1/min: 1150 electromagnet Volt: 24 Del. quantity cm3/: 81.00...84.00 Charge press. hPa: 1000 1000s.: (79.50...85.50) Supply-pump 12th speed 1/min: 750 bar: 4.90...5.50 Charge press. hPa: 1000 pressure Shutoff Shutoff electromagnet Volt: 24 electromagnet Volt: 24 Del. quyntity cm3/: 82.50...83.50 1000s.: (80.00...86.00) Overlow quantity at overflow valve: 1/min: 500 18th speed Charge press. hPa: -Shutoff 1st speed 1/min: 500 Charge press. hPa: -Shutoff electromagnet Volt: 24 Del. quantity cm3/: 67.50...68.50 1000s.: (63.50...72.50) electromagnet Volt: 24 Overflow : 41.70...83.40 quantity cm3/10s: (26.70...98.40) 2nd speed 1/min: 1150 Mech. shutoff: Charge press. hPa: 1000 Mech. Abstellung: Shutoff electromagnet Volt: 24 1st speed 1/min: 1150

Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 24 Electr. shutoff: 1st speed 1/min: 375 Charge press. hPa: -Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 9.00...13.00 1000s.: (6.00...16.00) cm3/: 5.5 Dispersion 1000s.: (7.0) 1/min: 500 2nd speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 280 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 75.00...125.00 1000s.: (75.00...125.00) 1/min: 440 2nd speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 50.00...80.00 1000s.: (50.00...80.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 70.00...130.00 1000s.: (70.00...130.00) Shutoff electromagnet: Cut-in : 20.0 min voltage Rated voltage : 24.0 Mounting and assembly dimensions:

mn: -

KF mm: 5.2...5.6 ms: 1.2...1.6 svs max. mm: 2.7 ya mm: 34.8...38.8 yb mm: 42.7...48.3

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Designation

Note inst. in remarks column

Test scheet : CUM : 07.93 Edition replaces : 03.05.90 Calibrating oil : ISO-4113

Injection pump : VE6/12F1050R373-2 Type number : 0 460 426 145

Customer Part-No. :

Customer-specific information : CDC

Customer

: 6BTA-5.9 I **Engine**

KW: 124 Power 1/min: 2100 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening |

Pressure bar: 250.00...253.00

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length

mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses Timing-device travel

1/min: 750 Speed

Charge press. hPa: 1000 Setting value mm: 1.50...1.90

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 750 Speed

Charge press hPa: 1000 Setting value bar: 2.90...3.50

Shutoff

electromagnet Volt: 24

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 94.50...95.50

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4.0 1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1000s.: 50.50...51.50

Shutoff

electromagnet Volt: 24 cm3/: 9.0Dispersion 1000s.: (9.0)

Low-idle speed regulation

Speed 1/min: 375

Del. quantity cm3/

1000s.: 8.00...12.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1100 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 73.00...79.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100 Speed

Del. quantity cm3/:		Shutoff	
mind 1000s.:	60.00	electromagnet Volt:	24
Shutoff	21	Overflow :	
electromagnet Volt:	1	quantity cm3/10s:	(40.60154.00)
Inspection-pump tes Test specifications		Delivery-quant. and	breakaway char.
Timing device chara	cteristic:	1nd speed 1/min:	
2nd speed 1/min:	1050	Charge-air pressure point hPa:	
Charge press hPa:		Shutoff	300
TD travel mm:		electromagnet Volt:	24
	(2.203.60)	Del. quantity cm3/:	
Shutoff	+	1000s.:	(75.5084.50)
electromagnet Volt:		2nd speed 1/min:	
3rd speed 1/min:		Charge press. hPa:	1060
Charge press hPa:	1000	Shutoff	
TD travel mm:	1.501.90	electromagnet Volt:	24
	(1.002.40)	Del. quantity cm3/:	(0.003.00
Shutoff electromagnet Volt:	24	3rd speed 1/min:	(0.003.00)
4th speed 1/min:	šm I	Charge press. hPa:	
Charge press hPa:		Shutoff	1000
TD travel mm:	0.501.30	electromagnet Volt:	24
mn:	(0.201.60)	Del. quantity cm3/:	
Shutoff	+		(15.0055.00)
electromagnet Volt:	24	5th speed 1/min:	
_	+	Charge press. hPa:	1000
Supply-pump pressure	e characteristic: + -	Shutoff	-
A-A	t +	electromagnet Volt:	
1st speed 1/min:		Del. quantity cm3/:	
Charge press. hPa: Supply-pump	1		(70.0082.00)
	1.802.40 I	9th speed 1/min: Charge press. hPa:	
Shutoff	1.60	Shutoff	1000
electromagnet Volt:	24	electromagnet Volt:	24
2nd speed 1/min:		Del. quantity cm3/:	
Charge press. hPa:			(82.00.,.88.00)
Supply-pump	+	10th speed 1/min:	900
	2.903.50	Charge press. hPa:	1000
Shutoff	+	Shutoff	
electromagnet Volt:		electromagnet Volt:	
3rd speed 1/min: Charge press. hPa:		Del. quantity cm3/:	
Supply-pump	I	12th speed 1/min:	(86.0092.00)
	4.304.90	Charge press. hPa:	
Shutoff	4.304.70	Shutoff	1000
electromagnet Volt:	24	electromagnet Volt:	
	†	Del. quyntity cm3/:	
Overlow quantity at	overflow valve:	1000S.: 18th speed 1/min:	(92.0098.00)
1st speed 1/min:	sm I	Charge press. hPa:	
Charge press. hPa:		Shutoff	
Shutoff	+	electromagnet Volt:	
electromagnet Volt: Overflow :	/1 70 93 /0 T	Del. quantity cm3/:	
quantity cm3/10s:	41.7083.40	10005.:	(46.5055.50)
2nd speed 1/min:		Mech. shutoff:	
Charge press. hPa:		Mech. Abstellung:	
	.		

1/min: 1050 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 24 Electr. shutoff: 1/min: 375 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.00...12.00 1000s.: (5.00...15.00) cm3/: 5.5Dispersion 1000s.: (7.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...4.00 1000s.: (0.00...4.00) Automatic starting fuel delivery: 1st speed 1/min: 250 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.00...95.00 1000s.: (45.00...95.00) 2nd speed 1/min: 450 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 25.00...55.00 1000s.: (25.00...55.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 60.00...110.00

1000s.: (60.00...110.00)

: 20.0 : 24.0

Mounting and assembly dimensions:

mm: 5.2...5.6 KF MS mm: 1.4...1.8 SVS max. mm: 0.8 mm: 34.8...38.8 Ya mm: 44.5...50.1 Yb Remarks: : C.D.C. # 391 7000 * Correction at adjusting nut Overflow restriction 0.55 mm - Part No. ..303 Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket Ya = Distance between VE flange and speed-control lever in idle position Yb = Distance between VE flange and speed-control lever in rated speed position Measurement point = edge of control lever on distributor-head end

min voltage

Rated voltage

Cut-in

K mm: -

Shutoff electromagnet:

Note inst. in remarks column

Test scheet : CUM : 07.93 Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F1400R377 Type number : 0 460 426 148

Customer Part-No. :

Customer-specific information

Customer

: CDC

Engine

: 6 BTA- 5.9 IND.

KW: 141 Power 1/min: 2800 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250.00...253.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickryss : 2.00 mm: 840 x Length

Start of delivery

mm: 0.36 Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 2.4

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses Timing-device travel

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 1.50...1.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100 Charge press hPa: 1000

Setting value bar: 6.30...6.90

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 850 Speed Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 80.50...81.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0 1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1000s.: 72.00...73.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 375 Speed

Del. quantity cm3/

1000s.: 8.00...14.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

Speed 1/min: 1510 Charge press hPa: 1000

Del. quantity cm3/

1000s.: 56.00...62.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 100.00...150.00

1000s.: 100.0 mind

Shutoff	+	Overflow:	115.00184.00
electromagnet Volt:	12	quantity cm3/10s:	
Inspection-pump test	t specifications +	Delivery-quant. and	hreakayay char ·
Test specifications		becivery quarter and	Di Caraway Cital
Timing-device charac	cteristic:	1nd speed 1/min:	
2nd speed 1/min:	1/00	Charge-air pressure	-setting
Charge press hPa:		point hPa: Shutoff	טככ
TD travel mm:	2 70 3 50 I	electromagnet Volt:	12
mm.	(2.403.80)	Del. quantity cm3/:	
Shutoff	I		(76.0084.00)
electromagnet Volt:	12	2nd speed 1/min:	
3rd speed 1/min:		Charge press. hPa:	
Charge press hPa:		Shutoff	1000
TD travel mm:		electromagnet Volt:	12
	(1.002.40)	Del. quantity cm3/:	
Shutoff			(0.003.00)
electromagnet Volt:	12	4th speed 1/min:	
4th speed 1/min:		Charge press. hPa:	
Charge press hPa:		Shutoff	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	0.801.60	electromagnet Volt:	12
	(0.501.90)	Del. quantity cm3/:	
Shutoff	_	10005	(15.0055.00)
electromagnet Volt:	12 🗼	5th speed 1/min:	1510
33	1	Charge press. hPa:	
Supply-pump pressure	characteristic:	Shutoff	1000
		electromagnet Volt:	12
1st speed 1/min:	500	Del. quantity cm3/:	
Charge press. hPa:			(53.0065.00)
Supply-pump	1	9th speed 1/min:	
	3.504.10	Charge press. hPa:	
Shutoff	1	Shutoff	1555
electromagnet Volt:	12 +	electromagnet Volt:	12
2nd speed 1/min:		Del. quantity cm3/:	75.5078.50
Charge press. hPa:		1000s.:	(74.0080.00)
Supply-pump	+	10th speed 1/min:	
pressure bar:	6.306.90	Charge press. hPa:	
Shutoff	+	Shutoff	
electromagnet Volt:	12 +	electromagnet Volt:	12
3rd speed 1/min:		Del. quantity cm3/:	
Charge press. hPa:	1000		(78.0085.00)
Supply-pump	-	12th speed 1/min:	
pressure bar:	7.708.30	Charge press. hPa:	
Shutoff	+	Shutoff	
electromagnet Volt:	12 +	electromagnet Volt:	12
	+	Del. quyntity cm3/:	
Overlow quantity at	overflow valve:	1000s.:	(77.3084.00)
	+	18th speed 1/mira:	
1st speed 1/min:	500 +	Charge press. hPa:	
Charge press. hPa:	- +	Shutoff	
Shutoff	+	electromagnet Volt:	12
electromagnet Volt:		Del. quantity cm3/:	
Overflow:	97.00141.00		(69.5077.50)
quantity cm3/10s:			
2nd speed 1/min:	1400	Mech. shutoff:	
Charge press. hPa:	1000	Mech. Abstellung:	
Shutoff	+		
electromagnet Volt:	12 +	1st speed 1/min:	1400

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 12 Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm⁷/: 8.00...14.00 1000s.: (6.00...16.00) cm3/: 5.5 Dispersion 1000s.: (7.0) 1/min: 450 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...4.00 1009s.: (0.00...4.00) Automatic starting fuel delivery: 1/min: 240 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 90.00...140.00 1000s.: (90.00...140.00) 2nd speed 1/min: 370 Shutoff electromagnet Voit: 12 Del. quantity cm3/: 60.00...100.00 1000s.: (60.00...100.00) 1/min: 101 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 100.00...150.00 1000s.: (100.00...150.00) Shutoff electromagnet: Cut-in : 10.0 min voltage : 12.0 Rated voltage

Mounting and assembly dimensions:

mm: -

mm: -

mm: 1.0...1.4

SVS max. mm: 3.9 Ya mm: 34.8...38.8 Yb mm: 44.8...50.2

Remarks:

: C.D.C. # 391 6908

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

K

KF

MS

Designation

Note inst. in remarks column

Test scheet : CUM : 07.93 Edition : 08.07.92 replaces Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R371-1 Type number : 0 460 426 158

Customer Part-No. :

Customer-specific information

Customer : CASE

Engine : 6 T 590

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer: 40...48 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening |

bar: 250.00...253.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 750 Speed

Setting value mm: 3.10...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750

Setting value bar: 4.90...5.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 750

Del. quantity cm3/

1000s.: 59.00...60.00

Shutoff

electromagnet Volt: 12 cm3/: 4.0 Dispersion 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450

Del. quantity cm3/ 1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5

1000s.: (7.0)

Full-load speed regulation

Speed 1/min: 1160

Del. quantity cm3/

1000s.: 37.00...43.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Del. quantity cm3/: 65.00...105.00

1000s.: 65.00 mind

Shutoff

electromagnet Volt: 12

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1100 2nd speed

TD travel mm: 5.40...6.20

mm: (5.10...6.50)

Shutoff

electromagnet Volt: 12 3rd speed 1/min: 750

	3.103.50 + (2.604.00)	Shutoff
Shutoff	I	electromagnet Volt: 12 Del. quantity cm3/: 57.0060.00
electromagnet Volt:	12 I	10008:: (55.5061.50)
4th speed 1/min:		12th speed 1/min: 750
	1.001.80	Shutoff
	(0.702.10)	electromagnet Volt: 12
Shutoff	1	Del. quyntity cm3/: 59.0060.00
electromagnet Volt:	12	10008.: (56.5062.50)
a coot and and tott	1	20th speed 1/min: 500
Supply-pump pressure	e characteristic:	Shutoff
orther, bank b. coods	I	electromagnet Volt: 12
1st speed 1/min:	500 I	Del. quantity cm3/: 42.0050.00
Supply-pump	I	1000\$.: (40.0052.00)
	3.804.40 I	10003.: (40.00)2.00/
Shutoff	J I	Mech. shutoff:
electromagnet Volt:	12 I	rech. Shutoff:
2nd speed 1/min:		Electr. shutoff:
Supply-pump	750 T	Electr. Shutorr:
	4.905.50	1st speed 1/min. /25
Shutoff	4.705.50	1st speed 1/min: 425
elestromagnet Volt:	12	Del. quantity cm3/: 0.003.00
3rd speed 1/min:		1000s.: (0.003.00)
Supply-pump	1100	Tello del from
	6.407.00	Idle delivery:
Shutoff	6.407.00	1-h 4/ /50
	12	1st speed 1/min: 450
electromagnet Volt:	12 †	Shutoff
Overland months and	T. Caracter and Ca	electromagnet Volt: 12
Overlow quantity at	overflow valve:	Del. quantity cm3/: 9.0013.00
1st spend 4/min.	500	1000s.: (6.0016.00)
1st speed 1/min:	700	Dispersion cm3/: 5.5
Shutoff	42	1000s.: (7.0)
electromagnet Volt:		2nd speed 1/min: 550
	41.7083.40	Shutoff
quantity cm3/10s:		electromagnet Volt: 12
2nd speed 1/min:	1100 †	Del. quantity cm3/: 0.004.00
Shutoff	12	1000s.: (0.004.00)
electromagnet Volt:	12 +	
	55.60139.00	Automatic starting fuel delivery:
quantity cm3/10s:	(55.60139.00)	4
Dalifornia monte di		1st speed 1/min: 180
Delivery-quant. and	breakaway char.:	Shutoff
	†	electromagnet Volt: 12
Ond mand Atus	1070	Del. quantity cm3/: 65.00125.00
2nd speed 1/min:	1230 +	1000s.: (65.00125.00)
Shutoff	+	
electromagnet Volt:		2nd speed 1/min: 350
Del. quantity cm3/:	0.003.00	Shutoff
	(0.003.00)	electromagnet Volt: 12
3rd speed 1/min:	1180	Del. quantity cm3/: 17.5057.50
Shutoff	+	1000s.: (17.5057.50)
electromagnet Volt:		4.1
Del. quantity cm3/:		4th speed 1/min: 100
	(13.0033.00)	Shutoff
5th speed 1/min:	1100 +	electromagnet Volt: 12
Shutoff	+	Del. quantity cm3/: 65.00105.00
electromagnet Volt:		1000s.: (65.00105.00)
Del. quantity cm3/:	57.0045.00	
	(34.0046.00)	Shutoff electromagnet:
9th speed 1/min:	1100	-

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: KF mm: 5.0...5.4
MS mm: 0.8...1.2
SVS max. mm: 4.1
XK mm: 18.8...20.8
XL mm: 10.2...13.6
Ya mm: 34.8...38.8
Yb mm: 39.7...45.1

Remarks:

: C.D.C. # 391 8207

Overflow restriction 0.55 mm - Part No. ..303

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor—head end

Note inst. in remarks column

Test scheet : CUM
Edition : 07.93
replaces : 06.05.92
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R371-2 Type number : 0 460 426 201

Customer Part-No.:

Customer-specific information

Customer : CUM

Engine : 6 T 590

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. *C

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening |

Pressure bar: 250.00...253.00

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 700

Setting value mm: 1.30...1.70

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 700

Setting value bar: 4.70...5.30

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 700

Del. quantity cm3/

1000s.: 73.00...74.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450

Del. quantity cm3/

1000s.: 8.00...12.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 10008.: (7.0)

Full-load speed regulation

Speed 1/min: 1160

Del. quantity cm3/

1000s.: 45.00...51.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 80.00...120.00

mind 1000s.: 80.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100

TD travel mm: 3.90...4.70 mm: (3.60...5.00)

Shutoff

electromagnet Volt: 12 3rd speed 1/min: 700 TD travel mm: 1.30...1.70 Del. quantity cm3/: 45.00...51.00 1000s.: (42.00...54.00) mm: (0.80...2.20) Shutoff 9th speed 1/min: 1100 electromagnet Volt: 12 Shutoff 1/min: 500 4th speed mm: 0.00...0.70 TD travel mn: (0.00...1.00) Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quyntity cm3/: 73.00...74.00 Supply-pump pressure characteristic: 1000s.: (70.50...76.50) 1/min: 500 1/min: 500 1st speed 20th speed Supply-pump Shutoff electromagnet Volt: 12 Del. quantity cm3/: 68.00...76.00 1000s,: (66.00...78.00) pressure bar: 3.80...4.40 Shutoff electromagnet Volt: 12 2nd speed 1/min: 700 Supply-pump Mech. shutoff: bar: 4.70...5.30 pressure Shutoff Electr. shutoff: electromagnet Volt: 12 1/min: 1100 3rd speed 1/min: 450 1st speed Supply-pump Del. quantity cm3/: 0.00...3.00 pressure bar: 6.50...7.10 1000s.: (0.00...3.00) Shutoff Shutoff electromagnet Volt: 12 electromagnet volt: -Overlow quantity at overflow valve: Idle delivery: 1/min: 500 1st speed 1/min: 450 1st speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 8.00...12.00 1000s.: (5.00...15.00) Dispersion cm3/: 5.5 1000s.: (7.0) : 41.70...83.40 Overflow cm3/10s: (26.70...98.40) quantity 1/min: 1100 2nd speed Shutoff 1/min: 550 electromagnet Volt: 12 2nd speed : 55.60...139.00 Shutoff Overflow quantity cm3/10s: (40.60...153.00) electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Delivery-quant. and breakaway char.: Automatic starting fuel delivery: 2nd speed 1/min: 1230 Shutoff 1st speed 1/min: 180 electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 80.00...140.00 1000s.: (80.00...140.00) Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 1/min: 1190 3rd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 10.00...30.00 1000s.: (10.00...30.00) 1/min: 350 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...80.00 1000s.: (40.00...80.00) Shutoff electromagnet Volt: 12 1/min: 1160 5th speed Shutoff 1/min: 100 4th speed electromagnet Volt: 12 Shutoff electromagnet Volt: 12

Del. quantity cm3/: 80.00...120.00

1000s.: (80.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF ma: 5.0...5.4 MS mm: 0.8...1.2 SVS max.

nsm: 3.3 mm: 34.8...38.8 mm: 39.5...44.9 Ya Yb

Remarks:

Ya = Distance between VE flange and speed-control lever in idle

position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

Note inst. in remarks column

Test scheet : MAN Edition : 07.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R307-6 Type number : 0 460 426 223

Customer Part-No. :

Customer-specific information

Customer : MAN

: D 0826 TE 520 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 223

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 110 assembly

Opening |

Pressure bar: 250.00...253.00

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00

x Length

mm: 840

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 900 Speed

Charge press. hPa: 1000 Setting value mm: 1.90...2.30

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900 Charge press hPa: 1000

Setting value bar: 6.60...7.20

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 800 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 93.50...94.50

Shutoff

electromagnet Volt: 12 cm3/: 4.0 Dispersion 1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600

Del. quantity cm3/

1000s.: 67.00...68.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 300 Speed

Del. quantity cm3/

1000s.: 6.50...13.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 6.0 1000s.: (6.5)

Full-load speed regulation

Speed 1/min: 1180 Charge press hPa: 1000 Charge press Del. quantity cm3/ 1000s.: 67.00...73.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 900 Charge press hPa: 1000

Inj.-qty. cm3/

difference 1000s.: 13.00...21.00

Shutoff

electromagnet Volt: 12 TD-travei dif.measurement

correttore anticipo iniezione (SV)

1/min: 900 1.Speed 1/mir: 1000 2nd speed hPa: 1000 Charge press Charge press. hPa: 1000 TD-travel Shutoff mm: 0.10...0.30 difference electromagnet Volt: 12 : 55.60...139.00 Shutoff Overflow electromagnet Volt: 12 cm3/10s: (40.60...153.00) quantity Inspection-pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses Timing-device characteristic: 1/min: 600* 1nd speed Charge-air pressure-setting 1/min: 1100 point hPa: 450 2nd speed hPa: 1000 mm: 2.60...3.40 Charge press Shutoff TD travel electromagnet Volt: 12 mm: (2.30...3.70) Del. quantity cm3/: 87.00...88.00 1000s.: (85.00...90.00) Shutoff 1/min: 1300 electromagnet Volt: 12 2nd speed 3rd speed 1/m²n: 900 Charge press hPa: 1000 TD travel mm: 1.90...2.30 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) mm: (1.40...2.30) Shutoff 1/min: 1250 electromagnet Volt: 12 3rd speed Charge press. hPa: 1000 Shutoff 1/min: 750 4th speed Charge press hPa: 1000
TD travel mm: 0.70...1.50 electromagnet Volt: 12 Del. quantity cm3/: 0.00...40.00 mm: (0.40...1.80) 1000s.: (0.00...40.00) Shutoff electromagnet Volt: 12 1/min: 1200 4th speed Charge press. hPa: 1000 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 1/min: 1100 Del. quantity cm3/: 46.00...66.00 1st speed Charge press. hPa: 1000 1000s.: (46.00...66.00) 1/min: 1180 Supply-pump 5th speed bar: 7.40...8.00 Charge press. hPa: 1000 Shutoff pressure Shutoff electromagnet Volt: 12 2nd speed 1/min: 900 electromagnet Volt: 12 Del. quantity cm3/: 67.00...73.00 Charge press. hPa: 1000 1000s.: (65.50...74.50) 1/min: 1000 Supply-pump 9th speed pressure bar: 6.60...7.20 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 89.50...94.50 electromagnet Volt: 12 1/mis: 750 3rd speed Charge press. hPa: 1000 1000s.: (88.00...96.00) 1/min: 800 Supply-pump 12th speed bar: 6.00...6.60 pressure Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12
Del. quyntity cm3/: 93.50...94.50
1000s.: (91.50...96.50) electromagnet Volt: 12 Overlow quantity at overflow valve: 1/min: 600 18th speed 1/min: 600 1st speed Charge press. hPa: -Charge press. hPa: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 67.00...68.00 1000s.: (65.00...70.00) Shutoff electromagnet Volt: 12 : 41.70...83.40 Overflow cm3/10s: (26.70...98.40) quantity 1/min: 600 20th speed

Charge press. hPa: Shutoff electromagnet Volt:		+ Shutoff + electromagnet Volt: 12
Del. quantity cm3/:	95.50104.50 (94.00106.00)	TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 900#
Mech. shutoff: Mech. Abstellung:		Charge press. hPa: 1000 TD-travel : 0.100.30
1st speed 1/min: Charge press. hPa:		difference mm: (0.100.30) Shutoff electromagnet Volt: 12
Del. quantity cm3/: 1000s.:		+ 3rd speed 1/min: 900* - Charge press, hPa: 1000
Shutoff electromagnet volt:	12	+ TD-travel : 0.102.10 Z + difference mm: (0.102.10) Z + Shutoff
Electr. shutoff:		electromagnet Volt: 12
1st speed 1/min: Charge press. hPa:	-	SP pressdif.measurement: pompa di mandata (FP):
	0.003.00 (0.003.00)	1st speed 1/min: 900' Charge press. hPa: 1000
Shutoff electromagnet volt:	-	Supply pump- pressure : 0.100.30 difference bar: (0.100.30)
Idle delivery:		Shutoff electromagnet Volt: 12
1st speed 1/min: Shutoff	300	Automatic starting fuel delivery:
<pre>electromagnet Volt: Del. quantity cm3/:</pre>	6.5013.50	1st speed 1/min: 220
Dispersion cm3/:		Shutoff electromagnet Volt: 12
2nd speed 1/min: Shutoff	400	Del. quantity cm3/: 85.00145.00 1000S.: (85.00145.00)
electromagnet Volt: Del. quantity cm3/:	0.003.00	2nd speed 1/min: 450 Shutoff
Load-dependent start	(0.003.00)	electromagnet Volt: 12 Del. quantity cm3/: 80.00110.00 1000S.: (80.00110.00)
Inj. qty.dif.measure		3rd speed 1/min: 100
1st speed 1/min: Charge press. hPa:	1000	Shutoff electromagnet Volt: 12
Injqty. cm3/: difference 1000S.: Shutoff		Del. quantity cm3/: 74.0076.00 1000S:: (70.0080.00)
electromagnet Volt: 3rd speed 1/min:	900#	Shutoff electromagnet:
Charge press. hPa: Inj.—qty. cm3/:	13.0021.00	+ Cut-in + min voltage : 10.0
difference 1000s.: Shutoff		Rated voltage : 12.0
electromagnet Volt: 5th speed 1/min:	900*	Mounting and assembly dimensions:
Charge press. hPa: Injqty. cm3/:	2.008.00 Z	+ Designation + K mm: -
difference 1000S.:	(2.008.00) Z	+ KF mm: KOT + MS mm: 0.81.2

SVS max.

mm: 1.0

Ya

mm: 37.4...40.4

Ϋ́b

mm: 41.9...47.1

Remarks:

Operate control lever after each 3-7132 manifold-pressure compensator pressure change.

* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Z = Absolute delivery

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor—head end

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

Note inst. in remarks column

Test scheet : REN Edition : 07.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R459 : 0 460 484 049 Type number

Customer Part-No. :

Customer-specific information Customer : RENAULT

Engine : F8Q - 732 A

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

bar: 130.00...133.00 Pressure

Test ini. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 4.10...4.50

AFB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

Setting value bar: 4.50...5.10

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm3/: 2.5

1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 1250

Del. quantity cn3/

1000s.: 31.50...32.50

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KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12 cm3/: 2.5 Dispersion

1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500

Del. quantity cm3/

1000s.: 1.00...5.00

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450

Del. quantity cm3/ 1000s.: 25.50...31.50

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 40.00...70.00

1000s.: 40.00 mind

KSB/AFB

Valve Volt: -

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1250

Injqty. cm3/ difference 1000s.: -9.0013.00#	+ Supply-pump + pressure bar: 3.103.70
KSB/AFB	+ KSB/AFB
valve Volt: - Shutoff	+ valve Volt: - + Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
TD-travel dif.measurement	- 2nd speed 1/min: 1250
correttore anticipo iniezione (SV) 1.Speed 1/min: 1250	Supply-pump bar: 4.505.10
TD-travel	+ KSB/AFB
difference mm: -0.30.50# KSB/AFB	+ valve Volt: - + Shutoff
valve Volt: — Shutoff	+ electromagnet Volt: 12 + 3rd speed 1/min: 2000
electromagnet Volt: 12	+ Supply-pump
order and the focts of	pressure bar: 6.507.10
Inspection-pump test specifications	+ KSB/AFB
Test specifications in parentheses	+ valve Volt: -
	+ Shutoff
Timing device characteristic:	electromagnet Volt: 12
1st speed 1/min: 2000	Overlow quantity at overflow valve:
TD travel mm: 7.608.40	+
mm: (7.308.70)	1st speed 1/min: 750
KSB/AFB	+ KSB/AFB
valve Volt: -	valve Volt: -
Shutoff : -	+ Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
3rd speed 1/min: 1250 TD travel mm: 4.104.50	+ Overflow : 41.7083.40
mm: (3.605.60)	quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 2250
KSB/AFB	KSB/AFB
valve Volt: -	Valve Volt: -
Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
4th speed 1/min: 750	+ Overflow : 55.60139.00
TD travel mm: 1.702.50	quantity cm3/10s: (40.60153.00)
mm: (1.402.80)	+
KSB/AFB	Delivery-quant. and breakaway char.:
valve Volt: -	†
Shutoff	2nd annual 1/min 2000
electromagnet Volt: 12 8th speed 1/min: 5008	+ 2nd speed 1/min: 2950 + KSB/AFB
TD travel mm: 1.904.30	+ valve Volt: -
mm: (1.904.30)	Shutoff
KSB/AFB	electromagnet Volt: 12
valve Volt: 12	- Del. quantity cm3/: 0.005.00
Shutoff	10008.: (0.005.00)
electromagnet Volt: 12	3rd speed 1/min: 2650
9th speed 1/min: 310A	+ KSB/AFB
TD travel mm: 0.603.00	+ valve Volt: -
mm: (0.603.00)	+ Shutoff
KSB/AFB	+ electromagnet Volt: 12
valve Volt: 12	bel. quantity cm3/: 10.5018.50
Shutoff	1000s.: (9.5019.50)
electromagnet Volt: 12	5th speed 1/min: 2450 KSB/AFB
Supply-pump pressure characteristic:	+ valve Volt: - + Shutoff
1st speed 1/min: 750	electromagnet Volt: 12

Del. quantity cm3/: 25.50...31.50 1000s.: (24.50...32.50) electromagnet Volt: 12 Del. quantity cm3/: 7.50...11.50 1/min: 2250 9th speed 1000s.: (5.50...13.50) KSB/AFB valve Volt: -High Idle: Shutoff 1/mi: 500 1st speed KSB/AFB valve Volt: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...11.00 1000s.: (5.00...13.00) KSB/AFB valve Volt: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 32.50...34.50 1000s.: (31.20...35.80) 11th speed 1/min: 1625 Residual: 1/min: 500 1.Rotacao KSB/AFB KSB/AFB valve Volt: valve Volt: -Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.10...33.10 electromagnet Volt: 12 Del. quantity cm3/: 1.00...5.00 1000s.: (29.30...33.90) 1/min: 1250 1000s.: (1.00...5.00) 12th speed KSB/AFB Load-dependent start of delivery: valve Volt: -Inj.-qty.dif.measurement: Shutoff electromagnet Volt: 12 1/min: 1250 1st speed Del. quyntity cm3/: 31.50...32.50 : -7.7...-9.70¹ Inj.-qty. cm3/ 1000s.: (29.70...34.70) 1/min: 750 difference 1000s.: (-7.70...-9.70) 20th speed KSB/AFB KSB/AFB valve Volt: valve Volt: -Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 30.20...33.20 1/min: 1250 3rd speed cm3/: -9.0...-13.0# Inj.—qty. 1000s.: (29.40...34.00) difference 1000s.: (-9.0...-13.00) KSB/AFB Mech. shutoff: valve Volt: -Shutoff Electr. shutoff: electromagnet Volt: 12 1/min: 1250 5th speed 1/min: 410 1st speed Inj. qty. cm3/: 2.00...8.00 +Del. quantity cm3/: 0.00...3.00 difference 1000S.: (2.00...8.00) 1000s.: (0.00...3.00) KSB/AFB Shutoff valve Volt: electromagnet volt: -Shutoff KSB/AFB electromagnet Volt: 12 valve Volt: -TD-travel dif.measurement: correttore anticipo iniezione (SV): Damper set qty.: 1/min: 1250 1st speed : -0.3...-0.50# mm: (-0.30...-0.50) TD-travel LFG-setting: solidale con carcassa: difference Idle delivery: KSB/AFB valve Volt: -1/min: 410 1st speed Shutoff KSB/AFB electromagnet Volt: 12 3rd speed 1/min: 1250 valve Volt: -Shutoff

: -0.2...-0.60+ TD-travel difference mm: (-0.10...-0.70) KSB/AFB Volt: valve Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1/min: 1250 1st speed Supply pumppressure : -0.1...-0.301 bar: (-0.10...-0.30) difference KSB/AFB valve Volt: -Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 210 1st speed KSB/AFB valve Volt: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00)

1/min: 310 2nd speed KSB/AFB valve Volt: -Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 15.00...45.00 1000s.: (15.00...45.00)

1/min: 100 4th speed

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 3.3...3.5 mm: 5.2...5.6 K KF MS mm: 1.3...1.7 SVS max. mm: 1.8 mm: 27.0...31.0 Ya mm: 60.2...69.8 Yb

Remarks:

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

A = KSB adjustment point B = KSB curve point

* Unscrew KSB ball valve 2 mm

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Note inst. in remarks column

Test scheet : OPE : 07.93 Edition

replaces

: ISO-4113 Calibrating oil

Injection pump : VE4/9F2500R305-2 Type number : 0 460 620 009 Customer Part-No.: 897 078 6390

Customer-specific information Customer : ISUZU

Engine : 4EC1-T

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed Charge press. hPa: 700

Setting value mm: 3.20...3.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250 Charge press hPa: 700

Setting value bar: 4.00...4.60

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 700

Del. quantity cm3/

1000s.: 40.20...41.20

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5 1000s.: (2.5)

Low-idle speed regulation

Speed 1/min: 425

Del. quantity cm3/

1000s.: 8.70...12.70

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.5 1000s.: (3.0)

Full-load speed regulation

1/min: 2750 Charge press hPa: 700

Del. quantity cm3/

1000s.: 15.40...21.40

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 44.00...76.00 mind 1000s.: 44.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1250 Charge press hPa: 700

cm3/ Inj.-qty.

difference 1000s.: 6.00...14.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV) 1.Speed 1/min: 1250 Charge press hPa: 700

TD-travel

mm: 0.90...1.10 difference

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses Shutoff electromagnet Volt: 12 Timing-device characteristic: : 116.76...161.24 Overflow | cm3/10s: (116.76...161.24) quantity 1st speed 1/min: 2250 hPa: 700 Charge press Delivery-quant. and breakaway char.: mm: 6.60...7.40 TD travel mm: (6.30...7.70) electromagnet Volt: 12 1/min: 1000 1nd speed 3rd speed* 1/min: 1250 Charge-air pressure-setting point hPa: 340* hPa: 700 mm: 3.20...3.60 mm: (2.70...4.10) Charge press point TD travel Shutoff electromagnet Volt: 12 Shutoff Del. quantity cm3/: 37.50...38.50 1000s.: (35.50...40.50) electromagnet Volt: 12 ord speed 1/min: 2750 Charge press. hPa: 700 Shutoff 4th speed 1/min: 800 Charge press hPa: 700 mm: 1.40...2.20 TD travel rm: (1.10...2.50) electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 Shutoff 1000s.: (0.00...6.00) electromagnet Volt: 12 1/min: 2000 1/min: 2750 5th speed 5th speed Charge press. hPa: 700 Shutoff Charge press. hPa: 700 mm: 5.70...6.50 TD travel mm: (5.40...6.80) electromagnet Volt: 12 Del. quantity cm3/: 15.40...21.40 Shutoff electromagnet Volt: 12 con speed 1/min: 2600 Charge press. hPa: 700 Shutoff 1000s.: (14.40...22.40) Supply-pump pressure characteristic: 1st speed 1/min: 2250 electromagnet Volt: 12 Charge press. hPa: 700 Del. quantity cm3/: 28.40...36.40 Supply-pump 1000s.: (28.40...36.40) pressure bar: 6.10...6.70 1/min: 2500 9th speed Charge press. hPa: 700 Shutoff Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 electromagnet Volt: 12 Charge press. hPa: 700 Del. quantity cm3/: 36.40...39.40 Supply-pump 1000s.: (35.60...40.20) pressure 10th speed 1/min: 2300 bar: 4.00...4.60 Charge press. hPa: 700 Shutoff Shutoff electromagnet Volt: 12 3rd speed 1/min: 800 electromagnet Volt: 12 Charge press. hFa: 700 Del. quantity cm3/: 38.30...41.30 1000s.: (37.60...42.00) Supply-pump 1/min: 2000 pressure bar: 2.90...3.50 11th speed Charge press. hPa: 700 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12
Del. quantity cm3/: 38.00...41.00
1000S.: (37.50...41.50) Overlow quantity at overflow valve: 1st speed 1/min: 600 1/min: 1500 12th speed Charge press. hPa: 700 Shutoff Charge press. hPa: -Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Overflow : 75.06...119.54 Del. quyntity cm3/: 40.20...41.20 cm3/10s: (75.06...119.54) quantity 1000s.: (38.40...43.00) 2nd speed 1/min: 2500 13th speed 1/min: 1500 Charge press. hPa: 700 Charge press. hPa: -

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 27.50...31.50 1000s.: (27.00...32.00) 1/min: 1300 15th speed Charge press. hPa: 700 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.70...43.70 1000s.: (40.20...44.20) 20th speed 1/min: 600 Charge press. hPa: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.60...34.60 1000s.: (29.60...35.60) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 425 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 425 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.70...12.70 1000s.: (6.70...14.70) cm3/: 2.5 Dispersion 1000s.: (3.0) 2nd speed 1/min: 550 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1250 1st speed Charge press. hPa: 700 Inj.-qty. cm3/ : 6.00...14.00 difference 1000s.: (6.00...14.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 Charge press. hPa: 700 TD-travel : 0.90...1.10 difference mm: (0.90...1.10) Shutoff

Automatic starting fuel delivery:

2nd speed 1/min: 400

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 42.50...57.50

1000s.: (42.50...57.50)

1/min: 100 4th speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 44.00...76.00

1000s.: (44.00...76.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Operate control lever after each manifold-pressure compensator pressure $: VL = 40.0^{\circ}...50.0^{\circ}$ change.

* Correction at adjusting nut

electromagnet Volt: 12

Note remarks

: MAN Test sheet Edition : 23.09.93

Replaces

Test oil : ISO-4113

Combination no. : 0 400 845 043

Injection pump

Pump designation: PES5A95D410LS2543

EP type number : 0 410 895 978

Governor

: RQV250...1100AB1038b Governor design.

Governer no. : 0 420 214 237

Customer-spec. information : MAN Customer

Engine : D 2565 M/MF

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.50...1.60 Prestroke mm

: (1.45...1.65)

Rack travel in mm : 9.00...12.00

: 1-3-5-4-2 Firing order

: 0-72-144-216-288 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 1100 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 11.0...11.2

100 s: (10.8...11.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.4...1.9

100 s: (-) Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150

Rack travel in mm : 14.40...14.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 110.5...112.5)

1000 : (108.5...114.5)

: 3.00 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Setting point:

Speed : 1150 rpm Rack travel in mm: 16.0

Testing:

1st rack travel in: 10.00

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1175...1205 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

Speed : 100 mon Minimum rack trave: 7.50 rpm : 250 Speed Rack travel in mm : 5.90...6.10

Rack travel in mm: 2.00

: 315...375 Speed ממח : 450 Speed rpm Maximum rack trave: 1.00

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.00...11.10

rpm : 800 2nd speed

Rack travel in m: 11.30...11.50

3rd speed rpm : 500

Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min: 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed וווכנים

Del.quantity cm3/: 106.5...110.5

1000 s: (104.5...112.5)

Speed rpm : 500 Del.quantity cm3/ : 0.0...111.5

1000 s: (0.0...113.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...160.0

1000 s: (-)

Rack travel in mm : 16.00...16.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Note remarks Test sheet : CUM 8,3 a69 : 1-5-3-6-2-4 Firing order Edition : 16.07.93 : 09.89 Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing Combination no. : 0 400 866 146 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6A100b320/3RS2691 Time to cyl. no. : 1 EP type number : 9 410 230 025 Governor BASIC SETTING Governor design. : RSV400...1100A0c2190 -36R1st_speed rom: 1100 Governer no. : 0 420 233 243 Rack travel in mm : 11.40...11.50 Customer-spec, information Del.quantity cm3/: 10.7...10.9 Customer : C.D.C. Engine : 6 CT 8.3 100 s: (10.5...11.1) : 138.0 1st version kW Spread cm3 : 0.4Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 400.0 2nd speed Rack travel in mm: 5.7...5.9 Test oil Del.quantity cm3/: 1.4...1.8 inlet temp. °C : 38...42 100 s: (1.2...2.1) Overflow valve cm3 : 0.6 Spread : 1 417 413 047 100 s: (0.8) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 101 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Opening : 207...210 pressure, bar Governor spring pre-tension Click setting x : ? Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test Lines : 1 680 750 D14 rpm : 1100 Speed : 107.5...109.5 Del.quantity 1000 : (105.5...111.5) Outside diameter x Wall thickness : 4.00 Spread cm3 : 6.00x2.00x603 x Length mm 1000 : (6.50) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values ____ Control lever position degrees: 48...56 BEGINNING OF DELIVERY Test pressure, bar: 27...29 Testina:

1st rack travel in: 10.40

rom : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1225...1235 Speed

3rd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 27...35 Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.3

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rom : 400

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.40...11.50

2nd speed rpm : 750

Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 125.5...129.5 1000 s: (123.5...131.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm: 5.70...5.90 Del.quantity cm3/: 14.5...18.5 1000 s: (12.0...21.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: C.D.C. # 3915952

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : CUM Edition : 16.07.93

Replaces : -

Test oil : ISO-4113

Combination no. : 0 400 866 172

Injection pump

Pump designation : PES6A1000320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1250A0C2190

-55R

Governer no. : 0 420 233 286

Customer—spec. information Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 131.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 90% 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

Spread cm3: 0.4

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.2...1.6

100 s: (1.0...1.9)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Speed Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1250

Del.quantity : 99.5...101.5

1000 : (97.5...103.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.80 rpm : 1325...1335 Speed 2nd rack travel in: 4.00 rpm : 1400...1410 Speed 3rd rack travel in: 4.00 rpm : 1400...1430 Speed 4th rack travel in: 1500 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring rpm : 400 Speed Rack travel in mm: 4.8 Testing: : 100 Speed COM Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.20...5.40 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 Speed rpm : 1325...1335 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rom : 400 Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 12.5...16.5 1000 s: (10.0...19.0) cm3 : 6.00 Spread 1000 s: (8.00) Remarks: : C.D.C. # 3920811 Limit shutoff stop screw to 1.0 mm. Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM

Edition : 21.04.93

Replaces :

Test oil : ISO-4113

Combination no. : 0 400 866 196

Injection pump

Pump designation : PES6A100b320/3RS2763

EP type number : 0 410 806 006

Governor

Governor design. : RSV375...1100A0C2190

-71R

Governer no. : 0 420 233 310

Customer—spec. information Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 134.0 Rated speed : 2200

TEST BENCH REGUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 10.6...10.8

100 s: (10.4...11.0)

Spread cm3: 0.4

100 s: (0.6)

2nd speed rpm : 375.0 Rack travel in mm : 5.9...6.1

Del.quantity cm3/: 2.1...2.5

100 s: (1.8...2.7) Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Speed Degree: -3

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 106.5...108.5 1000 : (104.5...110.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1230...1240 Speed

3rd rack travel in: 4.00

Speed rpm : 1230...1260 4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 31...39

Setting point w/out bumper spring

: 375 rpm Rack travel in mm: 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 : 375 COM

Rack travel in mm : 5.90...6.10

TORGUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.90...11.00 2nd speed rpm : 750

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 119.5...123.5

1000 s: (117.5...125.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 375

Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 21.0...25.0

1000 s: (18.5...27.5)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: C.D.C. # 3921101

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet

: CUM

Edition

: 16.07.93

Replaces

: 06.93

Test oil

: ISO-4113

Combination no.

: 0 400 866 208

Injection pump

Pump designation: PES6A1000320/3RS2691

EP type number

Governor

: 9 410 230 025

Governor design.

: RSV400...1100A0c2190 -80r

Governer no.

: 0 420 233 319

Customer-spec. information

Customer

: C.D.C.

Engine

: 6 CT 8.3

1st version kW

: 156.6

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test Lines

: 1 680 750 014

Outside diameter

x Wall thickness x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

Spread

2nd speed

Spread

mpm : 1100

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 12.4...12.6

100 s: (12.2...12.8)

cm3 : 0.4

100 s: (0.6)

rpm : 425.0

Rack travel in mm: 5.6...5.8

Del.quantity cm3/: 1.5...1.9 100 s: (1.2...2.1)

cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

Del.quantity

: 124.5...126.5 1000 : (122.5...128.5)

Spread

: 4.00

cm3 1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.30 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1195...1205 Speed 3rd rack travel in: 4.00 Speed rpm : 1195...1225 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 21...29 Setting point w/out bumper spring rpm : 425 Rack travel in mm: 5.2 Testing: Speed : 100 LOW Minimum rack trave: 19.00 : 425 Speed nom: Rack travel in mm : 5.60...5.80 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed MCL : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (125.0...155.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 425 Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) Spread cm3 : 6.00 1000 s: (8.00) Remarks: : C.D.C. # 3921140 Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark at 10° cam

rotation angle after start of delivery,

B17

cylinder 1

Note remarks

Test sheet : DEE : 16.07.93 Edition Replaces : 02.93

Test oil : ISO-4113

Combination no. : 0 400 876 412

Injection pump

Pump designation: PES6A1000410RS2762-1

EP type number : 0 410 806 008

Governor

: RSV450...1100A0c2252 Governor design.

-3L

: 0 420 232 592 Governer no.

Customer-spec. information

Customer : JOHN DEERE

: 6076TDW 30 Engine |

1st version kW : 120.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp, °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.95...3.05 : (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed ripm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 450.0 Rack travel in mm : 5.2...5.4

Del.quantity cm3/: 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.5

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed : 1100 rpm

: 101.0...103.0 Del.quantity 1000 : (99.0...105.0)

: 4.00 Spread cm3

: (6.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.90 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1200...1210 Speed 3rd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring rpm : 450 Rack travel in mm: 4.8 Testina: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 450 Rack travel in mm : 5.20...5.40 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.90...11.00 2nd speed rpm : 500 Rack travel in m: 12.30...12.50 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed man Del.quantity cm3/: 136.5...140.5 1000 s: (134.5...142.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 100.0...120.0

1000 s: (95.0...125.0)

1000 s: (16.5...25.5)

rpm : 450

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 19.0...23.0 Spread cm3 : 6.00 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE54248 Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

LOW IDLE

Speed

Note remarks

Test sheet : VOL Edition : 06.08.93

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 846 761

Injection pump

Pump designation : PE6P110A320RS3108W

EP type number : 0 411 816 729

Governor

Governor design. : RQV250...1100PA649

Governer no. : 0 421 815 346

Customer—spec. information Customer : VOLVO

Engine : THD100EE

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 17.1...17.3

100 s: (16.9...17.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30 2nd speed rpm : 500

2nd speed rpm : 500 travel mm : 4.10

travel mm : 4.10...4.90 3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

travel mm : 7.00...7.50

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700 Aneroid pressure h: 1000

Del.quantity : 171.0...173.0

1000 : (167.0...177.0)

Spread cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 11.80

Speed rpm : 1160...1170

2nd rack travel in: 4.00

rpm : 1255...1285 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed : 100 rom Minimum rack trave: 6.70 Speed rpm : 250

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 250...425 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed יחכייו hPa : 1000 Pressure

: 12.80...12.90 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 275 Rack travel in m: 9.60...9.80

3rd pressure hPa : 760

Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 105.5...108.5

1000 s: (103.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 170.0...200.0

1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5)

cm3 : 3.00 Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 13.00...14.00 Note remarks : 1- 3- 5- 4- 2 Firing order : MAN Test sheet Edition : 25.08.93 Replaces Test oil : ISO-4113 Phasing : 0-72-144-216-288 Combination no. : 0 402 035 030 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 5 Pump designation : PES5P120A720/3LS528 EP type number : 0 412 025 022 BASIC SETTING Governor Governor design. : RQ325/1000PA813-22 1st speed rpm: 750 Governer no. : 0 421 801 632 Rack travel in mm : 11.80...11.90 Customer-spec. information Customer : MAN Del.quantity cm3/: 21.9...22.1 Engine : D2865 LUH 02 100 s: (21.6...22.4) : 198.0 1st version kW Spread cm3 : 0.5: 2000 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 325.0 Rack travel in mm: 4.5...4.9 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) cm3 : 0.8 Overflow valve Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 rpm : 700 assembly : 1 688 901 019 Speed Rack travel in mm : 14.70...16.30 **Opening** pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version rpm : 750 diameter mm : 0,8 Speed Aneroid pressure h: 1000 Del.quantity : 219.0...221.0 Test lines : 1 680 750 075 1000 : (216.0...224.0) : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness x Length mm : 8.00x2.50x1000 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Setting point: Set equal delivery quant. per values Speed rpm : 700 Rack travel in mm : 15.5 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Testing:

1st rack travel in: 10.85

rpm : 1045...1061 Speed 2nd rack travel in: 4.00 rpm : 1105...1135 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring : 325 rpm Rack travel in mm: 4.7 Testing: Speed rpm : 200 Minimum rack trave: 6.50 Speed rpm : 325 Rack travel in mm : 4.60...4.80 Rack travel in mm : 2.00 Speed : 380...420 rpm TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.75...11.95 2nd speed rpm : 550 Rack travel in m: 11.75...11.955 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 1000 Pressure Rack travel mm : 11.75...11.85 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 190 Rack travel in m: 9.30...9.40 3rd pressure hPa : 500 Rack travel in m: 11.20...11.50 START CUT-OUT 1/min: 245 (265) Speed FUEL DELIVERY CHARACTERISTICS

Speed 1/min: 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm: 1000
Del.quantity cm3/: 219.0...225.0
1000 s: (216.0...228.0)
Aneroid pressure h: 1000

BREAKAWAY

ist version 1mm rack travel less than

full load rack tr: 10.85 Speed rpm : 1045...1061

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.30...4.70 Del.quantity cm3/ : 17.0...23.0 1000 s: (14.0...26.0)

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 3-726Q/2

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

Note remarks

Test sheet : NAV

Edition : 16.08.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 045 846

Injection pump

Pump designation : PES6P100A320LS3309

EP type number : 0 412 006 704

Covernor

Governor design. : RQV350...1300PA1042

-7K

: 0 421 815 331 Governer no.

Customer-spec. information Customer : NAVISTAR

Engine : DTA-408

: 130.5 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 240...260

Test nozzle holder

: 1 683 901 101 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 2.95...3.05 : (2.90...3.10) Prestroke mm

Rack travel in mm : 14.00...17.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

cm3 : 0.8Spread

100 s: (1.2)

2nd speed rpm : 350.0 Rack travel in mm: 5.1...5.3

Del.quantity cm3/: 1.4...1.8 100 s: (1.2...2.1)

cm3 : 0.4Spread 109 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

3rd speed

rpm : 350 1st speed

: 1.60...2.00 travel mm

2nd speed rpm : 500

travel mm : 3.80...4.20

travel mm

: 5.30...6.20

rpm : 800

4th speed : 1300 rpm

: 8.90...9.10 travel mm

5th speed : 1500 rpm

travel mm : 10.40...10.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1500

Speed Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 9.30...9.70 1st version 2nd pressure hPa : 270 rpm : 900 Speed Rack travel in m: 10.10...10.20 Aneroid pressure h: 1200 3rd pressure hPa : 630 : 100.0...102.0 Rack travel in m: 10.90...11.30 Del.quantity 1000 : (98.0...104.0) : 8.00 Spread cm3START CUT-OUT 1000 : (12.00) 1/min : 280 (290) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 116...124 1st version Aneroid pressure h: 1200 Testing: rpm : 1300 Del.quantity cm3/: 122.0...126.0 1000 s: (120.0...128.0) Spread cm3: 8.00 1st rack travel in: 10.70 rpm : 1360...1390 Speed 2nd rack travel in: 4.00 rpm : 1500...1510 1000 s: (12.0) Speed 4th rack travel in: 1650 Aneroid pressure h: rpm : 900 Speed rom : 0.00...1.00Speed Del.quantity cm3/: 75.5...79.5 1000 s: (73.5...81.5) LOW IDLE 1 Control lever position degrees: 71...79 BREAKAWAY Testing: Speed nom : 275 1st version Minimum rack trave: 6.20 1mm rack travel less than : 350 Speed riom. Rack travel in mm : 5.10...5.30 full load rack tr: 10.70 rbm : 1360...1390 Speed CONSTANT REGULATION Speed rpm : 350...520 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : ? rpm : 100 Speed Torque control curve - 1st version Del.quantity cm3/: 120.0...160.0 1st speed rpm : 900 1000 s: (115.0...165.0) Rack travel in m: 11.00...11.10 Rack travel in mm : 20.00...21.00 2nd speed rpm : 1300 Rack travel in m: 11.70...11.90 3rd speed rpm : 700 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.10...5.30 Rack travel in m: 10.30...10.70 Del.quantity cm3/: 14.5...18.5 1000 s: (12.0...21.0) Aneroid/Altitude Compensator Test Spread cm3 : 4.001000 s: (6.50) 1st version Settina Remarks: Speed rpm : 1300 : NAVISTAR #1819923C91 hPa : 1200 Pressure Rack travel mm : 11.70...11.90 Bow dimension: Sliding-sleeve position = 37.0 mmDelivery-valve spring pre-tension = 6.30...6.40 mm. Measurement 1/min: 1300 Speed Permissible alteration from 6.00...6.70 1st pressure hPa : -

MIO

Note remarks

Test sheet : DEE 10.1 d8 : 27.10.93 Edition : 24.08.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 032

Injection pump

Pump designation : PES6P110A720RS296 EP type number : 0 412 016 037

Governor

Governor design. : RSV400...1050P0/426D

: 0 421 835 082 Governer no.

Customer-spec. information Customer : JOHN DEERE

Engine : 6619 A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 9 681 230 705

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85 : (2,70...2,90)

Rack travel in mm : 9,00...12,00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm: 12,20

Del.quantity cm3/: 17,2...17,4

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 400 Rack travel in mm: 6,80 Del.quantity cm3/: 1,9...2,5

100 s: (-) cm3 : 0,4

Spread 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 172,0...174,0 Del.quantity

1000 : (-) cm3 : 4,0

Spread 1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11,20

rpm : 1095...1105 Speed

2nd rack travel in: 5,90

Speed rpm : 1135...1165

LOW IDLE 1

Control lever

position degrees: 15...23

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 6,30

Testina:

Speed : 100 rpm Minimum rack trave: 19,00 rpm : 400

Rack travel in mm : 6,70...6,90

Rack travel in mm: 2,00

rpm : 520...580 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 630 Rack travel in m: 12,60

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 rom hPa : 273,2 Pressure

Rack travel ann : 9,65...9,75

Measurement

1/min : 500 Speed

1st pressure hPa : 526,5

Rack travel in m: 11,30...1,90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 650 rpm

Del.quantity cm3/: 177,0...180,0

1000 s: (-)

Spread cm3 : 6,0

1000 s: (-)

Speed rpm : 550 Del.quantity cm3/: 84,0...92,0

1000 s: (-)

Spread cm3 : 6,0

1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11,20

Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170,0 1000 s: (-)

Rack travel in mm : 19,00...21,00

HIGH IDLE

1st version

Speed rpm : 1150 Rack travel in mm: 5,90
Del.quantity cm3/: 47,0...57,0
1000 s: (-)

Spread cm3 : 6.0

1000 s: (-)

LOW IDLE

Speed rpm : 400

Rack travel in mm: 6,80 Del.quantity cm3/: 19,0...25,0 1000 s: (-)

cm3 : 4,0Spread

1000 s: (-)

Remarks:

Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of delivery.

Note remarks

Test sheet : SCA : 16.08.93 Edition : 01.93 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 600

Injection pump

Pump designation : PE6P120A720RS7022 EP type number : 0 412 626 873

Governor

: RQV200...1000PA539 Governor design.

-14

: 0 421 814 011 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DS11 76

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 2.50

Test nozzle holder

: 1 688 901 104 assembly

Opening |

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.45...4.55 Prestroke mm

: (4.40...4.60)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 9-60-120-180-240-300 Phasing

: 0.30 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 16.8...17.0

100 s: (16.5...17.3)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 250.0Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.5...1.9

100 s: (1.2...2.2)

cm3 : 0.4Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 1.20...1.60 travel mm 2nd speed rpm : 350

: 2.40...3.00 travel mm

3rd speed rpm : 650

: 4.50...5.10 travel mm

rpm : 1045 4th speed

: 8.40...8.60 travel mm

rpm : 1150 5th speed

: 9.80...10.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1050 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1500

Spread cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.90

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1115...1145 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 63...71

Testing:

Speed rpm : 100 Minimum rack trave: 6.20 rpm : 250

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00 rpm : 390...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed mon. hPa : 1500 Pressure

: 10.90...11.00 Rack travel mm

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 390

Rack travel in m: 10.60...10.70

3rd pressure hPa : 340 Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 rpm : 1000

Del.quantity cm3/: 166.0...174.0

1000 s: (164.0...176.0)

Aneroid pressure h: -

rom : 500 Speed

Del.guantity cm3/: 142.0...146.0

1000 s: (140.0...148.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed man : 100

Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

Note remarks

Test sheet : SCA Edition : 16.08.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 603

Injection pump

Pump designation : PE6P120A720RS7022 EP type number : 0 412 626 873

Governor

: RQV200...1000PA539 Governor design.

-15

: 0 421 814 013 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DS11 75

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 2.50

Test nozzle holder

: 1 688 901 104 assembly

Opening

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.45...4.55

: (4.40...4.60)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 20.8...21.0

100 s: (20.5...21.3)

cm3 : 0.8Spread

100 s: (1.2)

rpm : 250.0 2nd speed Rack travel in mm: 4.6...5.0 Del.quantity cm3/ : 1.5...1.9 100 s: (1.2...2.2)

cm3 : 0.4Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

travel mm : 1.20...1.60

2nd speed rpm : 350 : 2.40...3.00 travel mm

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1045

: 8.40...8.60 travel mm

rpm : 1150 5th speed

: 9.80...10.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1500

: 208.0...210.0 Del.quantity

1000 : (205.0...213.0)

cm3 : 8.00Spread

1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 11.10

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1125...1155 4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 63...71

Testing:

Speed : 100 rpm

Minimum rack trave: 6.20 rpm : 250 Speed

Rack travel in mm: 4.60...4.80

Rack travel in mm : 2.00 rpm : 370...430 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 1500 Pressure

Rack travel mm : 12.10...12.20

Measurement

Speed 1/min: 500

1st pressure hPa : Rack travel in m: 9.90...10.30

2nd pressure hPa : 590

Rack travel in m: 11.60...11.70

3rd pressure hPa : 390

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 1000 Del.quantity cm3/ : 194.0...202.0 1000 s: (192.0...204.0)

Aneroid pressure h: -

Speed rom : 500 Del.quantity cm3/: 142.0...146.0

1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 140.0...180.0

1000 s: (136.0...184.0)

Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

Note remarks

Test sheet : SCA

Edition : 16.08.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 606

Injection pump

Pump designation : PE6P120A720RS71880

EP type number : 0 412 626 846

Governor

Governor design. : RQV200...950PA725-10

: 0 421 814 002 Governer no.

Customer-spec. information

Customer : SCANIA

Engine : DSC 11 32

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 2.50

Test nozzle holder

: 1 688 901 104 assembly

Opening

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,7

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.45...4.55

: (4.40...4.60)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 21.3...21.5

100 s: (21.0...21.8)

cm3 : 0.8Spread

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.5...1.9

100 s: (1.1...2.3)

Spread cm3 : 0.4100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 1.20...1.60 travel mm

2nd speed

rpm : 350 : 2.40...3.00 travel mm

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1045

travel mm : 8.40...8.60

5th speed rpm : 1125

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 213.0...218.0)

Spread

cm3: 8.00

1000 : (12.00)

RATED SPEED

1st version

Control Lever

position degrees: 110...118

Testina:

1st rack travel in: 11.50

riom: 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1090...1120 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Testing:

Speed : 125 mqn Minimum rack trave: 6.20

: 250 rpm

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00 Speed rpm: 370...430

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 man hPa : 1500 Pressure

: 12,50...12.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10

3rd pressure hPa : 270

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 950 Del.quantity cm3/ : 198.0...206.0

1000 s: (196.0...208.0)

Aneroid pressure h: -

Speed : 500 rpm

Del.quantity cm3/: 151.0...155.0

1000 s: (149.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 145.0...185.0 1000 s: (141.0...189.0)

Rack travel in mm: 10.20...10.60

LOW IDLE

Speed : 250 rom

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphracm.

Note remarks

Test sheet

Edition : 18.10.1993

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 783

Injection pump

Pump designation : PE6P12OA32OLS7858

EP type number : 0 412 626 875

Governor

: RQV300...1050PA1065 Governor design.

Governer no. : 0 421 814 068

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 180.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rom : 300 1st speed

: 0.93...1.33 travel mm

2nd speed rpm : 370

: 1.75...2.25 travel mm

3rd speed : 420 rpm

travel mm : 2.18...2.68

: 750 4th speed rpm

: 4.62...5.12 travel mm

: 1107 5th speed rpm

: 9.65...9.95 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1170 Speed

Rack travel in mm : 8.80...12.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 700 : 170.0...172.0 Del.quantity 1000 : (167.0...175.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 98...106 Testina: 1st rack travel in: 10.15 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1135...1165 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 64...72 Testina: Speed rpm : 200 Minimum rack trave: 8.10 rpm : 300 Speed Rack travel in mm : 5.10...5.30 CONSTANT REGULATION Speed rpm : 350...450 Aneroid/Altitude Compensator Test 1st version Setting Speed nom . : 400 hPa : 200 Pressure Rack travel mm : 10.25...10.35 Measurement 1/min: 400 Speed 1st pressure hPa : 300 Rack travel in m: 10.75...10.95 2nd pressure hPa : -Rack travel in m: 9.90...10.20 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version

Speed rpm : 550 Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 200 : 400 rpm Del.quantity cm3/: 117.5...120.5 1000 s: (114.5...123.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.15 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 125.0...145.0 1000 s: (121.0...149.0) Remarks: :

Aneroid pressure h: 700

Note remarks

Test sheet : MB

: 18, 10, 1993 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 786

Injection pump

Pump designation: PE6P120A320LS7846 EP type number : 0 412 626 865

Governor

Governor design. : RQV300...1050PA1065

Governer no. : 0 421 814 053

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 230.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 0.93...1.33

2nd speed rpm : 370

travel mm : 1.75...2.25

3rd speed rpm : 420

travel mm : 2.24...2.74

4th speed rpm : 750

: 4.62...5.12 travel mm

rpm : 1108 5th speed

: 9.71...9.91 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1170

Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1000

: 229.0...231.0 Del.quantity Rack travel in m: 9.80...10.10 1000 : (226.0...234.0) : 5.00 Spread cm3START CUT-OUT 1000 : (9.00) Speed 1/min: 220 (240) RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 101...109 1st version Aneroid pressure h: 1000 Testing: : 1050 Speed man Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0) 1st rack travel in: 11.70 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Spread cm3 : 8.00 rpm : 1145...1175 Speed 1000 s: (12.0) 4th rack travel in: 1300 Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/ : 188.5...191.5 1000 s: (185.5...194.5) rpm : 0.00...1.50Speed LOW IDLE 1 Control lever Aneroid pressure h: position degrees: 65...73 Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) Testina: cm3 : 8.00 Speed man Spread Minimum rack trave: 7.50 1000 s: (12.0) : 300 Speed Rack travel in mm : 5.10...5.30 **BREAKAWAY** CONSTANT REGULATION Speed mpm : 300...400 1st version 1mm rack travel less than TORQUE CONTROL Dimension a mm : 0.30 full load rack tr: 11.70 Torque control curve - 1st version rpm : 1090...1100 Speed : 700 1st speed rpm Rack travel in m: 12.95...13.05 STARTING FUEL DELIVERY 2nd speed nom : 1050 Rack travel in m: 12.60...12.80 3rd speed rpm : 850 Speed : 100 rpm Speed rpm : 100 Del.quantity cm3/ : 270.0...290.0 Rack travel in m: 12.90...13.10 1000 s: (266.0...294.0) Aneroid/Altitude Compensator Test Remarks: : 1st version Setting : 700 Speed rpm hPa : 1000 Pressure : 12.95...13.05 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 11.70...11.80 ੈਨਰੀ pressure hPa : 300 Rack travel in m: 10.60...10.80 3rd pressure hPa : -

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 18.10.1993 Edition Replaces : 1.93 Test oil : ISO-4113 Combination no. : 0 402 646 787 Injection pump Pump designation: PE6P120A320LS7858 EP type number : 0 412 626 875 Governor Governor design. : RQ300/1050PA1031-12 : 0 421 801 681 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M401 LA 1st version kW : 180.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 075 Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _ BEGINNING OF DELIVERY Test pressure, bar: 25...27 C11

Prestroke mm : 5.50...5.60 : (5.45...5.65) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rom : 1050Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 17.0...17.2 100 s: (16.7...17.5) Spread cm3 : 0.5100 s: (0.9) mpm : 300 2nd speed Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6Spread 100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Speed Rack travel in ma : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050 Aneroid pressure h: 700 : 170.0...172.0 Del.quantity 1000 : (167.0...175.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version

Setting point:

Speed : 600 rom Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.15

rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW 1DLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm : 5.2 Testing: Speed : 200 rpm Minimum rack trave: 7.60 rpm : 300 Speed Rack travel in mm : 5.10...5.30 Rack travel in mm: 2.00 : 360...400 Speed r pm Aneroid/Altitude Compensator Test 1st version Settina : 1050 Speed rpm Pressure hPa : 700 Rack travel mm : 11.00...11.10 Measurement Speed $1/\min : 400$ 1st pressure hPa : 200 Rack travel in m: 10.25...10.35 2nd pressure hPa : 300 Rack travel in m: 10.75...10.95 3rd pressure hPa : -Rack travel in m: 9.90...10.20 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 550 Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0)

cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 200 Speed : 400 rpm Del.quantity cm3/: 117.5...120.5 1000 s: (114.5...123.5) Aneroid pressure h: -Speed : 500 rpm **C12**

Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

fult load rack tr: 10.15 Speed : 1090...1106 mon

:

Remarks:

Note remarks

Test sheet : MB

: 18.10.93 Edition Replaces : 1.93 Test oil : ISO-4113

: 0 402 646 788 Combination no.

Injection pump

Pump designation: PE6P120A320LS7858 : 0 412 626 875 EP type number

Governor

Governor design. : RQ300/1050PA1031-11

: 0 421 801 680 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 200.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)
Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 18.9...19.1

100 s: (18.6...19.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 800

Del.quantity : 189.0...191.0 1000 : (186.0...194.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 20.0

Testina:

1st rack travel in: 10.75

rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed : 300 man Rack travel in mm: 5.2 Testing: Speed rpm : 200 Minimum rack trave: 7.50 Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00 Speed nom : 360...400 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1050 **LDW** hPa : 800 Pressure Rack travel mm : 11.70...11.80 Measurement 1/min: 400 Speed 1st pressure hPa : 350 Rack travel in m: 10.90...11.00 2nd pressure hPa : 200 Rack travel in m: 10.10...10.30 3rd pressure hPa : -Rack travel in m: 9.60...9.90 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 : 550 Speed mqn Del.quantity cm3/: 182.0...186.0 1000 s: (179.0...189.0) cm3 : 8.00 Spread

1000 s: (12.0)

Del.quantity cm3/: 148.5...151.5 1000 s: (145.5...154.5

rpm : 500

: 400

Aneroid pressure h: 350

Aneroid pressure h: -

וווכרו

Del.quantity cm3/: 126.0...128.0 1000 s: (123.0...131.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.75 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

:

Speed

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS : 5.20...5.30 Prestroke mm : (5.15...5.35) Rack travel in mm : 20.00...21.00 Note remarks : 6-3-5-2-4-1 Firing order Test sheet : MB : 18.10.93 Edition : 1.93 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 646 789 Tolerance + - * : 0.50 (0.75) Injection pump Time to cyl. no. : 6Pump designation : PE6P120A320LS7846 EP type number : 0 412 626 865 BASIC SETTING Governor Governor design: : RQ300/1050PA1031-10 rom : 10501st speed : 0 421 801 679 Governer no. Rack travel in mm : 12.30...12.40 Customer-spec, information Customer : MERCEDES-BENZ Del.quantity cm3/: 20.1...20.3 Engine : 0M401 LA 100 s: (19.8...20.6) : 213.0 cm3 : 0.51st version kW Spread Rated speed : 2100 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300 2nd speed Test oil Rack travel in mm : 5.4...6.0 : 38...42 inlet temp. *C Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6 Overflow valve Spread : 1 417 413 025 100 s: (1.0) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 rpm : 600 assembly : 1 688 901 105 Rack travel in mm : 19.20...20.80 Openina . : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 rpm : 1050 Speed Aneroid pressure h: 800 Del.quantity : 201.0...203.0 1000 : (198.0...206.0) Test lines : 1 680 750 075 : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness : 8.00x2.50x1000 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values Speed : 600 rpm Rack travel in mm: 20.0 BEGINNING OF DELIVERY

Testing:

1st rack travel in: 11.35

Test pressure, bar: 25...27

rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 5.7 Testing: Speed : 200 וחכרו Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm: 5.60...5.80 Rack travel in mm: 2.00 rpm : 360...400 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed mon : 1050 hPa : 800 Pressure Rack travel mm : 12.30...12.40 Measurement 1/min: 400 Speed 1st pressure hPa : 350 Rack travel in m: 11.05...11.15 2nd pressure hPa : 200 Rack travel in m: 10.20...10.40 3rd pressure hPa : -Rack travel in m: 9.70...10.00 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 : 550 Speed rpm Del.quantity cm3/: 195.0...199.0

1000 s: (192.0...202.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 350 : 400 Speed mqn Del.quantity cm3/: 148.5...151.5 1000 s: (145.5...154.5 Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 126.0...128.0 1000 s: (123.0...131.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.35 rpm : 1090...1106 Speed

STARTING FUEL DELIVERY

: 100 rpm Del.quantity cm3/: 270.0...290.0 1000 s: (266.0...294.0)

.

Remarks:

Note remarks

: MB Test sheet

: 18, 10, 93 Edition Replaces : 12.92 Test oil : ISO-4113

Combination no. : 0 402 646 793

Injection pump

Pump designation : PE6P120A320LS7846

EP type number : 0 412 626 865

Governor

Governor design. : RQ300/1050PA1030-8

: 0 421 801 673 Governer no.

Customer—spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm: 12.30...12.40

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm: 5.4...6.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

: 201.0...203.0 Del.quantity 1000 : (198.0...206.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.35

rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpan : 300 Rack travel in mm: 5.7 Testing: Speed : 200 rpm Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 5.60...5.80 Rack travel in mm: 2.00 Speed rpm : 360...400 Aneroid/Altitude Compensator Test 1st version Setting : 1050 Speed rpm Pressure hPa : 800 : 12.30...12.40 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 350 Rack travel in m: 11.05...11.15 2nd pressure hPa : 200 Rack travel in m: 10.20...10.40 3rd pressure hPa : -Rack travel in m: 9.70...10.00 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 : 550 Speed **m**ch Del.quantity cm3/: 195.0...199.0 1000 s: (192.0...202.0) cm3 : 8.00Spread 1000 s: (12.0)

Del.quantity cm3/: 126.0...128.0 1000 s: (123.0...131.0) Spread cm3 : 8.001000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.35 rpm : 1090...1106 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 40.0...70.0 1000 s: (36.0...74.0) Remarks:

Speed

Speed

Aneroid pressure h: 350

Aneroid pressure h: -

rpm Del.quantity cm3/: 148.5...151.5

: 400

rom : 500

1000 s: (145.5...154.5

Note remarks

Test sheet : MB

: 18.10.1993 Edition

Rept 80 %s : 11.92 Teen oil : ISO-4113

Combination no. : 0 402 646 794

Injection pump

Pump designation: PE6P120A320LS7858

EP type number : 0 412 626 875

Governor

Governor design. : RQV300...1050PA1033

: 0 421 814 028 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

1st version kW : 200.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.60...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 6

BASIC SETTING

1st speed rom : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 18.9...19.1

100 s: (18.6...19.4)

Spread cm3 : 0.5

100 s: (0.9)

rom : 300 2nd speed

Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.50...1.00 travel mm

2nd speed : 575 **m**ch travel mm

: 4.30...4.80 3rd speed **CDW** : 625

: 4.80...5.30 travel mm

: 830 4th speed man

travel mm

: 5.90...6.40 : 1109 5th speed **MC**

travel mm : 8.20...8.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1160 Speed

Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 800 : 189.0...191.0 Del.quantity 1000 : (186.0...194.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 115...123 Testina: 1st rack travel in: 10.75 rpm : 1090...1100 2nd rack travel in: 4.00 rom : 1145...1175 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Control lever position degrees: 77...85 Testing: Speed : 200 mqn Minimum rack trave: 8.10 rpm : 300 Rack travel in mm : 5.10...5.30 CONSTANT REGULATION Speed rpm : 300...400 Aneroid/Altitude Compensator Test 1st version Settina Speed : 1050 מכח Pressure hPa : 800 : 11.70...11.80 Rack travel mm Measurement Speed $1/\min:400$ 1st pressure hPa : 350 Rack travel in m: 10.90...11.00 2nd pressure hPa : 200 Rack travel in m: 10.10...10.30 3rd pressure hPa : -Rack travel in m: 9.60...9.90 START CUT-OUT

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 : 550 rpm Del.quantity cm3/: 182.0...186.0 1000 s: (179.0...189.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 350 : 400 Speed rom Del.quantity cm3/: 148.5...151.5 1000 s: (145.5...154.5) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 126.0...128.0 1000 s: (123.0...131.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.75 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

Speed

Note remarks

: MB Test sheet

: 18.10.1993 Edition Replaces : 11.92 : ISO-4113 Test oil

Combination no. : 0 402 646 795

Injection pump

Pump designation: PE6P12OA320LS7858 EP type number : 0 412 626 875

Governor

: RQV300...1050PA1033 Governor design.

-8

: 0 421 814 027 Governer no.

Customer—spec. information

: MERCEDES-BENZ Customer

Engine : 0M401 LA

1st version kW : 180.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm: 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-130-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.52...0.92 travel mm

2nd speed rpm : 575

: 4.27...4.77 travel mm

3rd speed : 625 LDW.

: 4.72...5.22 travel mm

rpm : 840 4th speed

: 5.94...6.44 travel mm

rpm : 1109 5th speed

travel mm : 8.27...8.57

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1170 Speed

Rack travel in mm : 9.80...10.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 700 : 170.0...172.0 Del.quantity 1000 : (167.0...175.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 10.15 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1300 Speed $nc^{(2)}$: 0.00...1.50 LOW IDLE 1 Control lever position degrees: 79...87 Testing: Speed : 200 ripm Minimum rack trave: 8.10 rpm : 300 Speed Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 300...400 Speed Aneroid/Altitude Compensator Test 1st version Setting : 1050 Speed rpm hPa : 700 Pressure : 11.10...11.20 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 300 Rack travel in m: 10.75...10.95 2nd pressure hPa : 200 Rack travel in m: 10.25...10.35 3rd pressure hPa : -Rack travel in m: 9.90...10.20 START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 : 550 Speed rpm Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 200 Speed rpm : 400 Del.quantity cm3/: 117.5...120.5 1000 s: (114.5...123.5) Aneroid pressure h: -Speed rom : 500 Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version

1st version 1mm rack travel less than

full load rack tr: 10.15 Speed rom : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 125.0...145.0

1000 s: (121.0...149.0)

Remarks:

.

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS : 5.50...5.60 Prestroke mm : (5.45...5.65) Note remarks Rack travel in mm : 20.00...21.00 : 6-3-5-2-4-1 Firing order Test sheet : MB : 3.8.1993 Edition : 10.92 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 0 402 646 796 Tolerance + - " : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PE6P120A320LS7858 EP type number : 0 412 626 875 BASIC SETTING Governor Governor design. : RQ300/1050PA1030-5 1st speed rpm: 1050 : 0 421 801 665 Governer no. Rack travel in mm : 11.70...11.80 Customer-spec. information Del.quantity cm3/: 18.9...19.1 Customer : MERCEDES-BONZ Engine : 0M401 LA 100 s: (18.6...19.4) : 200.0 1st version kW cm3 : 0.5Spread : 2100 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300 2nd speed Test oil Rack travel in mm: 5.1...5.3 : 38...42 inlet temp. °C Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Overflow valve cm3 : 0.6Spread : 1 417 413 025 100 s: (1.0) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 rpm : 600 assembly : 1 688 901 105 Rack travel in mm : 19.20...20.80 Openina pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 1050 Aneroid pressure h: 800 : 189.0...191.0 Del.quantity Test Lines : 1 680 750 075 1000 : (186.0...194.0) : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness : 8.00x2.50x1000 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point:

: 600

rpm Rack travel in mm: 20.0

Speed

BEGINNING OF DELIVERY

per values _

Test pressure, bar: 25...27 Testina: 1st rack travel in: 10.70

C23

rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm: 5.2 Testing: : 200 Speed rom Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 rpm : 360...400 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 9.60...9.90 Rack travel mn Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 0.40...0.50 2nd pressure hPa : 350 Rack travel in m: 1.10...1.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 : 550 Speed **Lbw** Del.quantity cm3/: 182.0...186.0 1000 s: (179.0...189.0) Spread cm3 : 8.00

1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 126.0...128.0 1000 s: (123.0...131.0) Spread cm3 : 8.00

1000 s: (12.0)

1st version 1mm rack travel less than

full load rack tr: 10.70 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 45.0...65.0 1000 s: (41.0...69.0)

Rack travel in mm : 9.60...10.00

Remarks:

BREAKAWAY

Note remarks

Test sheet : MB

Edition : 18.10.1993 Replaces : 11.92

Test oil : ISO-4113

Combination no. : 0 402 646 797

Injection pump

Pump designation : PE6P120A320LS7858 EP type number : 0 412 626 875

Governor

Governor design. : RQ300/1050PA1030-4

Governer no. : 0 421 801 664

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 180.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter × Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 5-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.9...5.5 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

peed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 700

Del.quantity : 170.0...172.0

1000 : (167.0...175.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.15

rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm: : 300 Speed Rack travel in mm: 5.2 Testing: Speed rom : 200 Minimum rack trave: 7.60 rpn: : 300 Speed Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 rpm : 360...400 Speed Aneroid/Altitude Compensator Test 1st version Settina : 1050 Speed POTI Pressure hPa : 700 : 11.10...11.20 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 200 Rack travel in m: 10.25...10.35 2nd pressure hPa : 300 Rack travel in m: 10.75...10.95 3rd pressure hPa : -Rack travel in m: 9.90...10.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 550 Speed Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 200 Speed : 400 rpm Del.quantity cm3/: 117.5...120.5 1000 s: (114.5...123.5) Aneroid pressure h: rpm : 500 Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.15

Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100 Del.auantity cm3/ : 40.0...70.0 1000 s: (36.0...74.0)

Rack travel in mm : 9.90...10.30

Remarks:

Spread

BOSCH INJ. PUMP TEST SPECIFICATIONS : 5.20...5.30 Prestroke mm : (5.15...5.35) Rack travel in mm : 20.00...21.00 Note remarks Firing order : 6-3-5-2-4-1 Test sheet : MB : 18.10.93 Edition : 11.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 646 799 Tolerance + - * : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PE6P12OA320LS7852 EP type number : 0 412 626 871 BASIC SETTING Governor Governor design. : RQ300/950PA1031-5 1st speed rpm : 600 : 0 421 801 657 Governer no. Rack travel in mm : 14.00...14.10 Customer-spec, information Customer : MERCEDES-BENZ Del.quantity cm3/: 23.4...23.6 Engine : 0M441 LA 100 s: (23.1...23.9) : 250.0 1st version kW cm3 : 0.5Spread : 1900 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm : 5.6...6.2 Test oil Del.quantity cm3/: 1.6...2.2 inlet temp. °C : 38...42 100 s: (1.3...2.5) Overflow valve Spread cm3 : 0.6: 1 417 413 025 100 s: (1.0) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 105 rpm : 600 assembly Speed Rack travel in mm: 19.20...20.80 Opening : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar Orifice plate 1st version diameter mm : 0,8 Speed rom : 600 Aneroid pressure h: 1200 : 234.0...236.0 Del.quantity 1000 : (231.0...239.0) Test lines : 1 680 750 075 : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness x Length mm : 8.00x2.50x1000 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values Speed : 600 rpm Rack travel in mm: 20.0 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing:

1st rack travel in: 13.05

Speed rpm : 990...1006 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.9 Testing: Speed rpm : 200 Minimum rack trave: 8.10 Speed rpm : 300 Rack travel in mm: 5.80...6.00 Rack travel in mm: 2.00 Speed rpm : 380...420 Aneroid/Attitude Compensator Test 1st version Setting : 600 Speed man hPa : 1200 Pressure : 14.00...14.10 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 13.10...13.20 2nd pressure hPa : 250 Rack travel in m: 11.00...11.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 950 Del.quantity cm3/: 228.0...232.0 1000 s: (225.0...235.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 550 rpm : 400 Speed Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.05

Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 50.0...80.0

1000 s: (46.0...84.0)

Rack travel in mm : 10.10...10.50

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 18.10.93 Edition Replaces : 8.92 Test oil : ISO-4113 Combination no. : 0 402 646 917X Injection pump Pump designation: PE6P120A320LS7834-10 EP type number : 0 412 626 853 Governor Governor design. : RQ300/950PA971 : 0 421 801 543 Governer no. Cust. part no. : 0180740402 Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M441 LA 1st version kW : 230.0 : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 075 Outside diameter

: 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Test pressure, bar: 25...27 : 5.50...5.60 Prestroke mm : (5.45...5.65) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 : 0-60-120-180-240-300 Phasing Phasing : 0.50 (0.75) Tolerance + - * Time to cyl. no. : 6 BASIC SETTING 1st speed rpm : 550 Rack travel in mm : 15.25...15.35 Del.quantity cm3/: 24.0...24.2 100 s: (23.7...24.5) cm3 : 0.5Spread 100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm: 6.3...6.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Spread cm3 : 0.6100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 550 Aneroid pressure h: 1200 : 240.0...242.0 Del.quantity 1000 : (237.0...245.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Setting point: Speed : 600 rpm Rack travel in mm : 20.0

x Wall thickness

per values

BEGINNING OF DELIVERY

x Length mm

Testina: 1st rack travel in: 14.00 rpm : 990...1006 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.6 Testing: Speed rpm : 200 Minimum rack trave: 8.50 : 300 mon Rack travel in mm : 6.50...6.70 Rack travel in mm : 2.00 Speed rpm : 380...420 TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version 1st speed rpm : 950 Rack travel in m: 14.90...15.10 : 800 2nd speed mom Rack travel in m: 15.20...15.40 rpm : 550 3rd speed Rack travel in m: 15.25...15.35 Aneroid/Altitude Compensator Test 1st version Setting Speed : 550 rom hPa : 1200 Pressure : 15.25...15.35 Rack travel mm Measurement 1/min : 400Speed 1st pressure hPa : 550 Rack travel in m: 12.85...12.95 2nd pressure hPa : 250 Rack travel in m: 10.80...11.00 3rd pressure hPa : -Rack travel in m: 10.10...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 950 Speed Del.quantity cm3/: 235.5...239.5 1000 s: (232.5...242.5)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/ : 188.5...191.5 1000 s: (185.5...194.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.00 Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 40.0...70.0 1000 s: (36.0...76.0)

:

Remarks:

002

Note remarks

Test sheet : MB

Edition : 18.10.93 Replaces : 11.92 Test oil : ISO-4113

Combination no. : 0 402 646 921X

Injection pump

Pump designation : PE6P120A320LS7837-10

EP type number : 0 412 626 855

Governor

Governor design. : RQ300/1050PA972-3

Governer no. : 0 421 801 565

Cust. part no. : 0200741202

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1200

Del.quantity : 244.0...246.0 1000 : (241.0...249.0)

cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Spread

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testina: 1st rack travel in: 13.90 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rom : 1185...1215 4th rack travel in: 1300 rom : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.9 Testing: : 200 Speed rpm Minimum rack trave: 7.70 : 300 rom Rack travel in mm : 6.80...6.00 Rack travel in mm: 2.00 : 380...420 Speed mom Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed nom Pressure hPa : 1200 : 15.00...15.10 Rack travel mm Measurement 1/min : 400Speed 1st pressure hPa : 550 Rack travel in m: 13.40...13.50 2nd pressure hPa : 150 Rack travel in m: 9.60...9.80 3rd pressure hPa : -Rack travel in m: 8.90...9.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed : 1050 rpm Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 550 : 400 Speed rpm Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.90 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 60.0...90.0 1000 s: (56.0...94.0)

Rack travel in mm : 8.90...9.30

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 25...27 : 5.20...5.30 Note remarks Prestroke mm : (5.15...5.35) Test sheet Rack travel in mm : 20.00...21.00 : MB : 18.10.93 Edition Firing order : 6-3-5-2-4-1 Replaces : 11.92 : ISO-4113 Test oil Combination no. : 0 402 646 924X Phasing : 0-60-120-180-240-300 Phasing Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation: PE6P120A320LS7837-10 EP type number : 0 412 626 855 Time to cyl. no. : 6 Governor Governor design. : RQ300/950PA971-3 BASIC SETTING Governer no. : 0 421 801 557 1st speed rpm: 600 Cust. part no. : 0200743202 Rack travel in mm : 15.00...15.10 Customer-spec. information Customer : MERCEDES-BENZ Del.quantity cm3/: 24.4...24.6 : OM441 LA 100 s: (24.1...24.9) Engine 1st version kW : 250.0 cm3 : 0.5Spread : 1900 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Overflow valve Spread cm3 : 0.6: 1 417 413 025 100 s: (1.0) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 105 assembly rpm : 600 Speed Rack travel in mm : 19,20,...20,80 Openina | : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar Orifice plate 1st version diameter mm : 0.8 rpm : 600 Speed Aneroid pressure h: 1200 : 244.0...246.0 Del.quantity Test Lines : 1 680 750 075 1000 : (241.0...249.0) : 5.00

> RATED SPEED 1st version

Spread

Setting point:

: 600 Speed rpm Rack travel in mm: 20.0

cm3

1000

: (9.00)

per values

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

Testing: 1st rack travel in: 14.05 Speed rpm : 990...1006 2nd rack travel in: 4.00 Speed rpm : 1080...1110 4th rack travel in: 1200 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.9 Testing: rpm : 200 Speed Minimum rack trave: 8.20 rpm : 300 Rack travel in mm : 5.70...6.00 Rack travel in mm: 2.00 rpm : 380...420 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 1200 Pressure Rack travel mm : 15.00...15.10 Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 13.40...13.50 2nd pressure hPa : 150 Rack travel in m: 9.60...9.80 3rd pressure hPa : -Rack travel in m: 8.90...9.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 550 rpm : 400 Speed Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0)

1mm rack travel less than

full load rack tr: 14.05

Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 65.0...95.0

1000 s: (61.0...99.0)

Remarks:

:

BREAKAWAY

1st version

Note remarks

Test sheet : MB

: 22.10.93 Edition Replaces : 11.92 : ISO-4113 Test oil

Combination no. : 0 402 646 925X

Injection pump

Pump designation : PE6P120A320LS7837-10

EP type number : 0 412 626 855

Governor

Governor design. : RQV300...950PA797-20

Governer no. : D 421 813 893

Cust. part no. : 0200743302

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 250.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening 1

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 15.00...15.10

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.6...6.2 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.05...1.45 travel mm

rpm : 567 2nd speed

: 4.40...4.90 travel mm

3rd speed rpm : 780

travel mm : 6.10...6.60

rpm : 1009 4th speed

: 8.40...8.70 travel mm

5th speed rpm : 1190

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1025

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1200 Del.quantity : 244.0...249.0) cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 120...128 Testina: 1st rack travel in: 14.05 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1085...1115 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 82...90 Testina: Speed rpm : 200 Minimum rack trave: 7.70 rom Rack travel in mm : 5.80...6.00 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Settina Speed rpm : 600 hPa : 1200 Pressure : 15.00...15.10 Rack travel mm Measurement Speed 1/min: 400

1st pressure hPa : 550 Rack travel in m: 13.40...13.50 2nd pressure hPa : 150 Rack travel in m: 9.60...9.80 3rd pressure hPa : -Rack travel in m: 8.90...9.20 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 550 rpm : 400 Speed

Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.05 Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100 bel.quantity cm3/ : 250.0...270.0

1000 s: (246.0...274.0)

Remarks:

800

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 22.10.93 Edition : 8.92 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 926X Injection pump Pump designation : PE6P120A320LS7834-10 EP type number : 0 412 626 853 Governor Governor design. : RQV300...950PA797-19 Governer no. : 0 421 813 901 Cust. part no. : 0180740502 Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M401 LA : 230.0 1st version kW : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 075 Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY 009

Test pressure, bar: 25...27 : 5.50...5.60 Prestroke mm : (5.45...5.65) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Phasing : 0-60-120-180-240-300 Phasing Tolerance + - * : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING rpm : 550 1st speed Rask travel in mm : 15.25...15.35 Del.quantity cm3/: 24.0...24.2 100 s: (23.7...24.5) cm3 : 0.5 Spread 100 s: (0.9) 2nd speed rpm : 300.0Rack travel in mm: 6.3...6.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6Spread 100 s: (1.0) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.05...1.45 travel mm : 617 2nd speed rom travel mm : 5.00...5.50 : 780 3rd speed rpm : 6.10...6.60 travel mm 4th speed rpm : 1009 travel mm : 8.40...8.70 5th speed rpm : 1092 travel mm : 9.80...10.30 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1020 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version

rpm : 550 Speed Aneroid pressure h: 1200 : 240.0...242.0 Del.quantity 1000 : (237.0...245.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testina: 1st rack travel in: 14.00 rom : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.40LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed **MQ** Minimum rack trave: 8.50 rpm : 300 Speed Rack travel in mm : 6.50...6.70 TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 950 Rack travel in m: 14.90...15.10 2nd speed rpm : 800 Rack travel in m: 15.20...15.40 3rd speed rpm : 550 Rack travel in m: 15.25...15.35 Aneroid/Altitude Compensator Test 1st version Setting Speed : 550 rpm hPa : 1200 Pressure : 15.25...15.35 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 550

Rack travel in m: 10.80...11.00

Rack travel in m: 10.10...10.40

3rd pressure hPa : -

Rack travel in m: 12.85...12.95 2nd pressure hPa : 250

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 950

Del.quantity cm3/: 235.5...239.5 1000 s: (232.5...242.5)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 550

rpm : 400 Speed

Del.quantity cm3/: 188.5...191.5 1000 s: (185.5...194.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

cm3 : 8.00

Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.00 Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 200.0...230.0 1000 s: (196.0...234.0)

•

Remarks:

Note remarks

Test sheet

Edition : 22.10.93 Replaces : 8.92

Test oil : ISO-4113

Combination no. : 0 402 646 929X

Injection pump

Pump designation: PE6P120A320LS7834-10

EP type number : 0 412 626 853

Governor

Governor design. : RQV300...1050PA797

-25

Governer no. : 0 421 813 924

Cust. part no. : 0200744102

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 15.25...15.35

Del.quantity cm3/: 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...6.9 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3: 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.05...1.45

2nd speed rpm : 608

travel mm : 4.80...5.30

3rd speed rpm : 820

travel mm : 5.90...6.40

4th speed rpm : 1108

travel mm : 8.40...8.70

5th speed rpm : 1183

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Speed Degree: -1 Speed rpm : 1130

Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Rack travel in m: 10.10...10.40 Speed rpm : 550 Aneroid pressure h: 1200 FUEL DELIVERY CHARACTERISTICS : 240.0...242.0 Del.quantity 1000 : (237.0...245.0) : 5.00 Spread cm3 1st version 1000 : (9.00) Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/: 233.5...237.5 RATED SPEED **1000** s: (232.5...242.5) 1st version Spread cm3 : 8.00 Control lever 1000 s: (12.0) position degrees: 120...128 Aneroid pressure h: 550 : 400 rpm Testing: Del.quantity cm3/: 188.5...191.5 1st rack travel in: 14.00 1000 s: (185.5...194.5) rpm : 1090...1100 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.40Spread cm3 : 8.001000 s: (12.0) LOW IDLE 1 Control lever position degrees: 87...92 **BREAKAWAY** Testing: 1st version : 200 Speed 1mm rack travel less than **m**cm Minimum rack trave: 8.70 rom : 300 full load rack tr: 14.00 Rack travel in mm : 6.50...6.70 Speed rpm : 1090...1100 TORQUE CONTROL STARTING FUEL DELIVERY Dimension a mm : 0.30 Torque control curve - 1st version rom : 1050 1st speed Speed : 100 rpm Del.quantity cm3/: 200.0...230.0 Rack travel in m: 14.90...15.10 1000 s: (196.0...234.0) 2nd speed rpm : 800 Rack travel in m: 15.20...15.40 : 550 3rd speed rpm Remarks: Rack travel in m: 15.25...15.35 Aneroid/Altitude Compensator Test 1st version Setting : 550 Speed man hPa : 1200 Pressure Rack travel mm : 15.25...15.35 Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 12.85...12.95 2nd pressure hPa : 250 Rack travel in m: 10.80...11.00 3rd pressure hPa : -

Note remarks

Test sheet : MB

Edition : 22.10.93 Replaces : 8.92 Test oil : ISO-4113

. 100 4115

Combination no. : 0 402 646 930X

Injection pump

Pump designation : PE6P120A320LS7834-10

EP type number

: 0 412 626 853

Governor

Governor design. : RQ300/1050PA972-7

Governer no.

: 0 421 801 583

Cust. part no. : 0200744002

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 230.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 15.25...15.35

Del.quantity cm3/: 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3: 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 peed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity : 240.0...242.0 1000 : (237.0...245.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0 Testina: cm3 : 8.00 Spread 1st rack travel in: 14.00 1000 s: (12.0) Speed rpm : 1090...1106 Aneroid pressure h: 550 2nd rack travel in: 4.00 Speed rpm : 400 Speed rpm: 1170...1200 4th rack travel in: 1300 Del.quantity cm3/: 188.5...191.5 1000 s: (185.5...194.5) rpm : 0.00...1.40 Speed Aneroid pressure h: rpa : 500 Speed Del.quantity sm3/: 134.0...136.0 1000 s: (131.0...139.0) LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed cm3 : 8.00Spread Rack travel in mm: 6.60 1000 s: (12.0) Testing: Speed rpm : 200 EREAKAWAY Minimum rack trave: 8.70 rpm : 300 1st version Rack travel in mm : 6.50...6.70 1mm rack travel less than Rack travel in mm: 2.00 rom: 380...420 Speed full load rack tr: 14.00 Speed irpm : 1090...1106 TORQUE CONTROL Dimension a mm : 0.35 STARTING FUEL DELIVERY Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 14.90...15.10 Speed ripin : 100 2nd speed rpm : 800 Del.quantity cm3/: 40.0...70.0 Rack travel in m: 15.20...15.40 1000 s: (36.0...74.0) 3rd speed rpm : 550 Rack travel in m: 15.25...15.35 Remarks: Aneroid/Altitude Compensator Test 1st version Setting : 550 Speed **CDM** hPa : 1200 Pressure Rack travel : 15.25...15.35 mm Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 12.85...12.95 2nd pressure hPa : 250 Rack travel in m: 10.80...11.00 3rd pressure hPa : -Rack travel in m: 10.10...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1050 Speed Del.quantity cm3/: 233.5...237.5 1000 s: (232.5...242.5)

Note remarks

Test sheet : MB

Edition : 22,10.93 Replaces : 11.92 Test oil : ISO-4113

Combination no. : 0 402 646 931X

Injection pump

Pump designation: PE6P120A320LS7837-10

EP type number : 0 412 626 855

Governor

: RQV300...1050PA797 Governor design.

-24

: 0 421 813 911 Governer no.

Cust. part no. : 0200748302

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

: 250.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 6

BASIC SETTING

1st speed rom: 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.6...6.2

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

1.05...1.45 travel mm

2nd speed rpm : 608

travel mm : 4.80...5.30

3rd speed rpm : 820

travel mm : 5.90...6.40

rpm : 1108 4th speed

: 8.40...8.70 travel mm

: 1280 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm: 600 Aneroid pressure h: 1200 : 244.0...246.0 Del.quantity 1000 : (241.0...249.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 118...126 Testing: 1st rack travel in: 13.90 rpm : 1090...1106 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 81...89 Testing: : 200 Speed **m**Cn Minimum rack trave: 7.70 rpm : 300 Rack travel in mm : 5.80...6.00 CONSTANT REGULATION rpm : 400...450 Speed TORQUE CONTROL Dimension a mm : 0.85 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 14.80...15.00 2nd speed rpm : 600 Rack travel in m: 14.00...14.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 1200 : 14.00...14.10 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 13.40...13.50 2nd pressure hPa : 150

3rd pressure hPa : -Rack travel in m: 8.90...9.20 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1050 Speed Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.G) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.90 rpm : 1090...1106 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 200.0...230.0 1000 s: (196.0...234.0) Remarks: :

Rack travel in m: 9.60...9.80

Note remarks

Test sheet : SCA

: 16.08.93 Edition Replaces : 10.92

Test oil : ISO-4113

Combination no. : 0 402 646 937

Injection pump

Pump designation : PE6P120A720RS71880

: 0 412 626 846 EP type number

Governor

Governor design. : RQV200...950PA725-7

: 0 421 813 803 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DSC11 21

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 2.50

Test nozzle holder

: 1 688 901 104 assembly

Openina

pressure, bar : 250...253

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 21.9...22.1

100 s: (21.6...22.4)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 225.0 Rack travel in mm: 4.6...5.2 Del.quantity cm3/: 1.5...1.9

100 s: (1.2...2.2) cm3 : 0.4

Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 225 : 1.20...1.60 travel mm

2nd speed rpm : 350

travel mm : 2.40...3.00 3rd speed rpm : 650

travel mm : 4.50...5.10

rpm : 1045 4th speed

: 8.40...8.60 travel mm

5th speed rpm : 1125

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1150

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 219.0...221.0

1000 : (216.0...224.0)

Spread cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 108...116

Testing:

1st rack travel in: 11.70

rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1105...1135 Speed

4th rack travel in: 1250

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 58...66

Testing:

: 100 Speed rpm Minimum rack trave: 6.20

rpm : 225

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00 : 350...410 Speed rom

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm hPa : 1500 Pressure

: 12,70...12,80 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.70

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10

3rd pressure hPa : 270

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

: 950 Speed rpm

Del.quantity cm3/: 202.0...210.0

1000 s: (200.0...212.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 151.0...155.0

1000 s: (149.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 150.0...180.0 1000 s: (146.0...184.0)

Rack travel in mm : 10.30...10.70

LOW IDLE

rpm : 225 Speed

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphraum.

Note remarks

Test sheet : MB

: 25.10.93 Edition : 11.92 Replaces Test oil : ISO-4113

: 0 402 646 942X Combination no.

Injection pump

Pump designation: PE6P120A320LS7837-10

EP type number : 0 412 626 855

Governor

Governor design. : RQ300/1050PA993 Governer no. : 0 421 801 581

Cust. part no. : 0200747102

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm : 600 1st speed

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.6...6.2 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1200

Aneroid ... Del.quantity 1000 : 244.0...246.0 : (241.0...249.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm : 20.0

Testina: 1st rack travel in: 13.90 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 Speed rom : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.90 Testing: Speed rpm Minimum rack trave: 8.10 rpm : 300 Rack travel in mm : 5.80...6.00 Rack travel in mm: 2.00 rpm : 380...420 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed man Pressure hPa : 1200 Rack travel mm : 15.00...15.10 Measurement 1/min : 400Speed 1st pressure hPa : 550 Rack travel in m: 13.40...13.50 2rd pressure hPa : 150 Rack travel in m: 9.60...9.80 3rd pressure hPa : -Rack travel in m: 8.90...9.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1050 Speed Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 550 : 400 Speed rpm Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0

1000 s: (129.0...137.0)

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.90 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 220.0...240.0

1000 s: (216.0...244.0)

Remarks:

:

Note remarks

Test sheet : MB

Edition : 25.10.93 Replaces : 11.92 Test oil : ISO-4113

Combination no. : 0 402 646 950X

Injection pump

Pump designation: PE6P120A320LS7837-10

EP type number : 0 412 626 855

Governor'

Governor design: RQ300/950PA993-2 Governer no: : 0 421 801 590

Cust. part no. : 0210747902

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 250.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 15.00...15.10

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1200 Del.quantity : 244.0...

ty : 244.0...246.0 1000 : (241.0...249.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing: 1st rack travel in: 14.05 rpm : 990...1006 Speed 2nd rack travel in: 4.00 Speed rpm : 1065...1095 4th rack travel in: 1200 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 5.90 Testina: : 200 Speed rpin Minimum rack trave: 8.30 rpm : 300 Rack travel in mm : 5.80...6.00 Rack travel in mm: 2.00 Speed :mcm : 380...420 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1200 Pressure Rack travel mm : 15.00...15.10 Measurement 1/min: 400 Speed 1st pressure hPa : 550
Rack travel in m: 13.40...13.50
2nd pressure hPa : 150 Rack travel in m: 9.60...9.80 3rd pressure hPa : -Rack travel in m: 8.90...9.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 550 rpm : 400 Speed Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.05

Speed rpm : 990...1066

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 240.0...260.0

1000 s: (236.0...264.0)

Remarks:

:

Note remarks

Test sheet : MB

: 25.10.93 Edition Replaces : 02.93 Test oil : ISO-4113

Combination no. : 0 402 646 976

Injection pump

Pump designation: PE6P120A320LS7846

EP type number : 0 412 626 865

Governor

Governor design. : RQ300/1050PA1031

: 0 421 801 642 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

: 230.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed rpm : 700

Aneroid pressure h: 1000 Del.quantity

: 229.0...231.0 1000 : (226.0...234.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed **LDW** Rack travel in mm: 20.0 Testina:

1st rack travel in: 11.70

rpm : 1090...1106 Speed

2nd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 5.2

Testing:

rpm : 200 Speed Minimum rack trave: 7.10 rpm : 300

Rack travel in mm : 5.10...5.30

Rack travel in mm: 2.00 rpm : 380...420 Speed

TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.60...12.80

2nd speed rpm: 700

Rack travel in m: 13.30...13.50

Aneroid/Altitude Compensator Test

1st version

Settina

: 700 Soeed l'IDITi hPa : 1000 Pressure

Rack travel mm : 12.95...13.05

Measurement

1/min: 400 Speed

1st pressure hPa : 550

Rack travel in m: 11.70...11.80 2nd pressure hPa : 300 Rack travel in m: 10.60...10.80

3rd pressure hPa : -

Rack travel in m: 9.80...10.10

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 1050 Del.quantity cm3/: 216.0...220.0

1000 s: (213.0...223.0)

Spread

cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: 550 Speed rpm : 400

Del.quantity cm3/: 188.5...191.5

1000 s: (185.5...194.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1090...1106 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 270.0...290.0

1000 s: (266.0...294.0)

Remarks:

.

Note remarks

Test sheet : MB

: 25.10.93 Edition : 21.08.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 977

Injection pump

Pump designation: PE6P120A320LS7846 EP type number : 0 412 626 865

Governor

Governor design. : RQ300/1050PA1030-1

Governer no. : 0 421 801 641

Customer—spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 230.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 4.9...5.5

Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Setting point:

rpm

Rack travel in mm: 20.0

Testina: 1st rack travel in: 11.70 rpm : 1090...1106 2nd rack travel in: 4.00 Speed rpm : 1165...1195 4th rack travel in: 1300 Speed rom : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 5.2 Testing: Speed : 200 (TOM Minimum rack trave: 7.50 rpm : 300 Rack travel in mm: 5.10...5.30 Rack travel in mm: 2.00 Speed rpm: 360...400 TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.60...12.80 2nd speed npm : 700 Rack travel in m: 13.30...13.50 Aneroid/Altitude Compensator Test 1st version Setting : 700 Speed rpm hPa : 1000 Pressure : 13.05...13.15 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 11.70...11.80 2nd pressure hPa : 300 Rack travel in m: 120.6...10.80 3rd pressure hPa : -Rack travel in m: 9.80...10.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 1050 Speed Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0)

cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 10.80...11.00

:

Remarks:

Spread

Note remarks

Test sheet : MB

: 25.10.93 Edition Replaces : 21.08.92 : ISO-4113 Test oil

Combination no. : 0 402 646 978

Injection pump

Pump designation: PE6P12OA32OLS7846 EP type number : 0 412 626 865

Governor

Governor design. : RQ300/950PA1031-1

Governer no. : 0 421 801 643

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M401 LA

1st version kW : 230.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm: 12.95...13.05

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Spread cm3 : 8.00Testina: 1000 s: (12.0) 1st rack travel in: 12.00 rpm : 990...1006 Speed 2nd rack travel in: 4.00 **BREAKAWAY** rpm : 1060...1090 Speed 4th rack travel in: 1300 1st version Speed rpm : 0.00...1.501mm rack travel less than LOW IDLE 1 full load rack tr: 12.00 Setting point w/out bumper spring rpm : 990...1006 Speed Speed rpm : 300 Rack travel in mm: 5.2 Remarks: : Testing: Speed rpm : 200 Minimum rack trave: 9.00 Speed rpm : 300 Rack travel in mm : 5.10...5.30 Rack travel in mm: 2.00 rpm : 390...430 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 700 Pressure hPa : 1000 Rack travel mm : 12.95...13.05 Measurement Speed $1/\min : 400$ 1st pressure hPa : 550 Rack travel in m: 11.70...11.80 2nd pressure hPa : 300 Rack travel in m: 10.60...10.80 3rd pressure hPa : -Rack travel in m: 9.80...10.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 950 Speed Del.quantity cm3/: 226.0...230.0 1000 s: (223.0...233.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 550 Speed : 400 rpm Del.quantity cm3/: 188.5...191.5 1000 s: (185.5...194.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

Note remarks

Test sheet : MB

: 25.10.93 Edition : 21.08.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 979

Injection pump

Pump designation : PE6P120A320LS7846

EP type number : 0 412 626 865

Governor

Governor design. : RQ300/950PA1032 Governer no. : 0 421 801 644

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 230.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2rid speed Rack travel in mm: 4.9...5.5

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point: Speed : 600 rpm

Rack travel in mm: 20.0

Testina: 1st rack travel in: 11.90 rpm : 990...1006 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.2 Testing: : 200 Speed rpm Minimum rack trave: 7.50 : 300 rpm Rack travel in mm : 5.10...5.30 Rack travel in mm: 2.00 Speed rpm : 360...400 Aneroid/Altitude Compensator Test 1st version Setting : 700 Speed ripin hPa : 1000 Pressure Rack travel mm : 13.05...13.15 Measurement Speed $1/\min:400$ 1st pressure hPa : 550 Rack travel in m: 11.70...11.80 2nd pressure hPa : 300 Rack travel in m: 10.60...10.80 3rd pressure hPa : -Rack travel in m: 9.80...10.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 950 Speed Del.quantity cm3/: 226.0...230.0 1000 s: (223.0...233.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 550 : 400 Speed rpm Del.quantity cm3/: 188.5...191.5 1000 s: (185.5...194.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 10.10...10.40

Remarks:

E02

Note remarks

: MB Test sheet

: 25.10.93 Edition : 21.08.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 980

Injection pump

Pump designation: PE6P120A320LS7846 EP type number : 0 412 626 865

Governor

Governor design. : RQV300...950PA1033

: 0 421 813 990 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 230.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm: 4.9...5.5

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9) Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.10...1.50 travel mm

2nd speed rpm : 567

: 4.40...5.00 travel mm

rpm : 780 3rd speed

: 6.00...6.60 travel mm

4th speed rpm : 1010

: 8.50...8.70 travel mm

5th speed rpm : 1190

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1066 Speed

Rack travel in mm : 10.60...13.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 700 Speed Aneroid pressure h: 1000 : 229.0...231.0 Del.quantity 1000 : (226.0...234.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 12.00 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Control Lever position degrees: 76...84 Testing: Speed : 200 rpm Minimum rack trave: 7.50 rpm : 300 Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 300...400 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 700 rpm hPa : 1000 Pressure : 12.95...13.05 Rack travel mm Measurement $1/\min : 400$ Speed 1st pressure hPa : 550 Rack travel in m: 11.70...11.80 2nd pressure hPa : 300 Rack travel in m: 10.60...10.80 3rd pressure hPa Rack travel in m: 9.80...10.10 START CUT-OUT Speed 1/min : 220 (240)

1st version Ameroid pressure h: 1000 rpm : 950 Speed Del.quantity cm3/: 226.0...230.0 1000 s: (223.0...233.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/ : 188.5...191.5 1000 s: (185.5...194.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 Speed rpm : 990...1000

Remarks:

:

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB

Edition : 25.10.93 : 21.08.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 983

Injection pump

Pump designation: PE6P120A320LS7846 EP type number : 0 412 626 865

Governor

: RQV300...1050PA1033 Governor design.

-5

: 0 421 813 994 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 230.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm: 12.95...13.05

Del.quantity cm3/: 22.9...23.1

100 s: (22.6,...23.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9) cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 0.54...0.94 travel mm rpm : 575

2nd speed

: 4.28...4.78 travel mm

rpm : 830 3rd speed

: 5.80...6.40 travel mm rpm : 1107 4th speed

travel mm : 8.23...8.53

5th speed : 1290 rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1160 Speed

Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 700 Aneroid pressure h: 1000 : 229.0...231.0 Del.quantity 1000 : (226.0...234.0) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control Lever position degrees: 116...124 Testing: 1st rack travel in: 11.70 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1155...1185 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Control Lever position degrees: 76...84 Testing: Speed . : 200 rpm Minimum rack trave: 7.50 man. Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 300...400 Speed TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.60...12.80 2nd speed rpm : 850 Rack travel in m: 12.90...13.10 3rd speed rpm : 700 Rack travel in m: 12.95...13.05 Aneroid/Altitude Compensator Test 1st version Setting : 700 Speed man hPa : 1000 Pressure Rack travel mm : 12.95...13.05 Measurement 1/min: 400 Speed 1st pressure hPa : 550

Rack travel in m: 11.70...11.80 2nd pressure hPa : 300 Rack travel in m: 10.60...10.80 3rd pressure hPa : -Rack travel in m: 9.80...10.10 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed : 1050 rpm Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/: 188.5...191.5 1000 s: (185.5...194.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.70 rom : 1090...1100 Speed

Remarks:

E06

BOSCH INJ. PUMP TEST SPECIFICATIONS : 5.20...5.30 Prestroke mm : (5.15...5.35) Note remarks Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Test sheet : MB : 27,11,92 Edition : 10.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 646 993 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation: PE6P120A320LS7852 : 0 412 626 871 EP type number BASIC SETTING Governor Governor design. : RQ300/1050PA1030-3 1st speed rpm: 600 Governer no. : 0 421 801 653 Rack travel in mm : 14.00...14.10 Customer-spec. information Customer : MERCEDES-BENZ Del.quantity cm3/ : 23.4...23.6 Engine : OM441 LA 100 s: (23.1...23.9) 1st version kW : 250.0 Spread cm3 : 0.5: 2100 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 fest oil Rack travel in mm: 5.6...6.2 inlet temp. °C : 38...42 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Overflow valve cm3 : 0.6Spread : 1 417 413 025 100 s: (1.0) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 assembly : 1 688 901 105 rpm : 600 Speed Rack travel 19 mm : 19.20...20.80 **Opening** pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 600 Aneroid pressure h: 1100 Del.quantity : 234.0...236.0 1000 : (231.0...239.0) Test lines : 1 680 750 075 : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness 2nd version x Length mm : 8.00x2.50x1000 Speed rpm : 600 Aneroid pressure h: 1100 Del.quantity cm3/: 234.0...236.0 (A) Injection pump setting values Insp. values in parentheses 1000 s: (231.0...239.0) Set equal delivery quant. : 5.00 Spread cm3 1000 s: (9.00) per values _

RATED SPEED

1st version

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

hPa : -Pressure Rack travel mm : 10.00...10.30 Setting point: rpm : 600 Speed Rack travel in mm: 20.0 Measurement Speed $1/\min : 500$ Testing: 1st rack travel in: 12.90 1st pressure hPa : 250 Rack travel in m: 10.90...11.00 2nd pressure hPa : 550 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Rack travel in m: 12.90...13.10 Speed 4th rack travel in: 1300 2th version rpm : 0.00...1.50Speed Setting Spee. : 500 **CDW** 2nd version hPa Pressure Rack travel in mm : 10.0...10.3 Setting point: : 600 Speed rpm Measurement Rack travel in mm : 20.0 : 500 Speed rpm Testing: 1st pressure hPa : 300 Rack travel in m: 10.7...10.8 1st rack travel in: 12.90 rpm : 1095...1110 Speed 2nd pressure hPa : 700 2nd rack travel in: 4.00 Rack travel in m: 12.8...13.0 rpm : 1180...1210 Speed 4th rack travel in: 1300 FUEL DELIVERY CHARACTERISTICS rpni : 0.00...1.50 Speed LOW IDLE 1 1st version Setting point w/out bumper spring Aneroid pressure h: 1100 rpm : 1050 rom Rack travel in mm: 5.9 Del.quantity cm3/: 223.0...227.0 1000 s: (220.0...230.0) cm3 : 8.00 Testing: Spread : 200 Speed 1000 s: (12.0) rpm Minimum rack trave: 8.30 Aneroid pressure h: -: 300 COM Speed rpm Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 cm3 : 8.00 rom : 370...410 Speed Spread 1000 s: (12.0) TORQUE CONTROL Dimension a mi : ? 2nd version 2nd speed rpm : 1050 Aneroid pressure h: 1100 Speed rpm : 1050
Del.quantity cm3/ : 223.0...227.0
1000 s: (220.0...230.0) Rack travel in m: 13.80...14.00 3rd speed rpm : 800 Rack travel in m: 14.40...14.60 cm3 : 8.00 Spread Torque control curve - 2nd version 1000 s: (12.0) rpm : 1050 1st speed Aneroid pressure h: -Rack travel in m: 13.8...14.0 Speed rpmin : 500 Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) 2nd speed rpm : 800 Rack travel in m: 14.4...14.6 Spread cm3 : 8.00Aneroid/Altitude 1000 s: (12.0) Compensator Test **BREAKAWAY** 1st version Setting 1st version : 500 Speed

E08

rpm

1mm rack travel less than

full load rack tr: 12.90

Speed rpm : 1095...1110

2nd version

1mm rack travel less than full load rack tr: 12.90

rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 45.0...75.0 1000 s: (41.0...79.0)

Rack travel in mm : 10.00...10.40

Remarks:

Values of version 1 only apply to regulators with LDA spring 2 424 619 110.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (5.15...5.35) Rack travel in mm : 20.00...21.00 Note remarks Test sheet : MB Edition : 25.10.93 Replaces Test oil : ISO-4113 : 0 402 646 993 Combination no. Injection pump Pump designation: PE6P120A320LS7852-1 EP type number : 0 412 626 910 Governor Governor design. : RQ300/1050PA1030-3 : 0 421 801 653 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M441 LA 1st version kW : 250.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 ïest nozzle holder : 1 688 901 105 assembly Openina . : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 075 Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

Firing order : 6-3-5-2-4-1 : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - * Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 600 Rack travel in mm : 14.00...14.10 Del.quantity cm3/: 23.4...23.6 100 s: (23.1...23.9) Spread cm3 : 0.5 100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6Spread 100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 600 Aneroid pressure h: 1100 : 234.0...236.0 Del.quantity 1000 : (231.0...239.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Setting point: : 600 Speed וחסניז Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.90

: 5.20...5.30

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Insp. values in parentheses Set equal delivery quant.

Speed rpm : 1095...1111 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rom : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed : 300 rom Rack travel in mm: 5.9 Testing: rpm Speed : 200 Minimum rack trave: 8.30 : 300 rpm Rack travel in mm : 5.80...6.00 Rack travel in mm: 2.00 rpm : 370...410 Speed TORQUE CONTROL Dimension a mm : 0.20 : 1050 2nd speed rpm Rack travel in m: 13.80...14.00 3rd speed rpm : 600 Rack travel in m: 14.00...14.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom Pressure hPa : 1100 Rack travel mm : 14.00...14.10 Measurement Speed 1/min: 400 1st pressure hPa : 550 Rack travel in m: 13.10...13.20 2nd pressure hPa : 250 Rack travel in m: 11.00...11.20 3rd pressure hPa : -Rack travel in m: 9.90...10.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 rpm : 1050 Del.quantity cm3/: 223.0...227.0 1000 s: (220.0...230.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 550 Speed : 400 **LDW**

Del.quantity cm3/: 203.0...206.0

1000 s: (200.0...209.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.90 Speed rpm : 1095...1111

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 45.0...75.0 1000 s: (41.0...79.0) Rack travel in mm : 10.00...10.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS
Note remarks

Test sheet : MB
Edition : 25.10.93
Replaces : 10.92
Test oil : ISO-4113

Combination no. : 0 402 646 994

Injection pump

Pump designation: PE6P12OA32OLS7852 EP type number: 0 412 626 871

Governor

Governor design. : RQ300/950PA1032-3 Governor no. : 0 421 801 654

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 250.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/: 1.6...2.2

190 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 I nom : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 600 Aneroid pressure h: 1100

Del.quantity : 234.0...236.0 1000 : (231.0...239.0)

Spread cm3 : 5.00

1000 : (9.00)

2nd version

Speed rpm: 600 Aneroid pressure h: 1100

Del.quantity cm3/: 234.0...236.0

1000 s: (231.0...239.0) cm3 : 5.00

Spread cm3 : 5.00 1000 s: (9.00)

RATED SPEED

1st version

Setting Setting point: Speed : 500 man : 600 Pressure Speed hPa rpm Rack travel in mm: 20.0 Rack travel in mm : 10.1...10.4 Testing: Measurement 1st rack travel in: 13.00 : 500 Speed rpm rpm : 990...1006 2nd rack travel in: 4.00 1st pressure hPa : 300 Rack travel in m: 10.8...10.9 2nd pressure hPa : 700 Speed rpm : 1065...1095 4th rack travel in: 1200 Speed rpm : 0.00...1.50 Rack travel in m: 12.9...13.1 2nd version FUEL DELIVERY CHARACTERISTICS Setting point: Speed : 600 1st version rpm Rack travel in mm : 20.0 Aneroid pressure h: 1100 rpm : 950 Speed Del.quantity cm3/: 228.0...232.0 1000 s: (225.0...235.0) Testina: 1st rack travel in: 13.00 cm3 : 8.00 rpm : 990...1005 Speed Spread 1000 s: (12.0) 2nd rack travel in: 4.00 rpm : 1065...1095 Aneroid pressure h: 550 Speed 4th rack travel in: 1200 Speed : 400 man Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) rom : 0.00...1.50Speed LOW IDLE 1 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) Setting point w/out bumper spring rpm Rack travel in mm: 5.9 Spread cm3 : 3.00 1000 s: (12.0) Testing: Speed : 200 rpm Minimum rack trave: 8.30 2nd version Speed rpm : 300 Aneroid pressure h: 1100 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 : 950 Speed mqn: Del.quantity cm3/: 228.0...232.0 1000 s: (225.0...235.0) Spread cm3 : 8.00 Speed : 370...410 rom . 1000 s: (12.0) Aneroid/Altitude Compensator Test Aneroid pressure h: rpmin : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) 1st version cm3 : 8.00 Setting Spread ; 600 Speed 1000 s: (12.0) rpm hPa : 1100 Pressure : 14.00...14.10 Rack travel mm BREAKAWAY Measurement Speed $1/\min : 400$ 1st version 1mm rack travel less than 1st pressure hPa : 550 Rack travel in m: 13.10...13.20 full load rack tr: 13.00 2nd pressure hPa : 250 Speed rpm : 990...1006 Rack travel in m: 11.00...11.20 3rd pressure hPa 2nd version Rack travel in m: 9.90...10.10 1mm rack travel less than 2th version full load rack tr: 13.00

rpm : 99.0...1005 Speed

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/: 50.0...80.0
1000 s: (46.0...84.0)
Rack travel in mm : 10.10...10.50

Remarks:

Values of version 1 only apply to regulators with LDA spring 2 424 619 110.

Note remarks

Test sheet : MB

: 25.10.93 Edition : 10.92 Replaces Test oil : TSO-4113

: 0 402 646 996 Combination no.

Injection pump

Pump designation : PE6P120A320LS7852 : 0 412 626 871 EP type number

Governor

Governor design. : RQ300/1050PA1031-4

Governer no.

: 0 421 801 656

Customer-spec, information

Customer

: MFRCEDES-BENZ

Engine : 0M441 LA

: 250.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8,00x2,50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 5.6...6.2 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100 Del.quantity : 234.0...239.0)

cm3 : 5.00 1000 : (9.00) Spread

2nd version

rpm : 600 Speed

Aneroid pressure h: 1100

Del.quantity cm3/: 234.0...236.0

1000 s: (231.0...239.0)

cm3 : 5.00Spread

1000 s: (9.00)

RATED SPEED -	† 1st version - Setting
1st version -	Speed rpm : 600
Setting point:	Pressure hPa : 1100 Rack travel mm : 14.0014.10
Speed rpm : 600	M
Rack travel in mm: 20.0	+ Measurement + Speed 1/min:400
Testing:	1711111111111
1st rack travel in: 12.90	1st pressure hPa : 550
Speed rpm : 10901106 - 2nd rack travel in: 4.00 -	Rack travel in m: 13.1013.20
Speed rpm : 11801210	- 2nd pressure hPa : 250 Rack travel in m: 11.0011.20
4th rack travel in: 1300	3rd pressure hPa : -
Speed rpm : 0.001.50	Rack travel in m: 9.9010.10
Out and to	2th version
2nd version -	Setting 500
Setting point:	Speed rpm : 500 Pressure hPa : -
Speed rom : 600 -	Rack travel in mm : 10.010.3
Rack travel in mm: 20.0	
Tacking	Measurement
Testing: 1st rack travel in: 12.80	Speed rpm : 500
Speed rpm : 10901105	1st pressure hPa : 300
2nd rack travel in: 4.00	Rack travel in m: 10.710.8
Speed rpm : 11801210 -	- 2nd pressure hPa : 700
4th rack travel in: 1300	Rack travel in m: 12.813.0
Speed rpm : 0.001.00	3rd pressure hPa : 1000 Rack travel in m: 14.014.1
LOW IDLE 1	rack cravet in iii. 14.014.1
Setting point w/out bumper spring -	START CUT-OUT
Speed rpm : 300	
Rack travel in mm : 5.9	Speed 1/min : 220 (240)
Testing:	FUEL DELIVERY CHARACTERISTICS
Speed rpm : 200 -	
Minimum rack trave: 8.10	†
Speed rpm : 300 - Rack travel in mm : 5.806.00 -	1st version
Rack travel in mm : 2.00	Aneroid pressure h: 1100 Speed rpm : 1050
Speed rpm : 380420	Del.quantity cm3/: 223.0227.0
	1000 s: (220.0230.0)
TORQUE CONTROL	- Spread cm3 : 8.00
Dimension a mm : 0.20 - 2nd speed rpm : 1050 -	1000 s: (12.0) Aneroid pressure h: 550
Rack travel in m: 13.8014.00	Speed rpm : 400
3rd speed rpm : 600 -	- Del.quantity cm3/: 203.0206.0
Rack travel in m: 14.0014.10	1000 s: (200.0209.0)
Tongue control cumo - 2nd vencion	Aneroid pressure h: -
Torque control curve - 2nd version - 1st speed rpm : 1050 -	- Speed rpm : 500 - Del.quantity cm3/ : 132.0134.0
Rack travel in m: 13.814.0	1000 s: (129.0137.0)
2nd speed rpm : 800	- Spread cm3:8.00
Rack travel in m: 14.514.7	1000 s: (12.0)
Aneroid/Altitude -	† 2nd version
Compensator Test -	Aneroid pressure h: 1100
The state of the s	Speed rpm 1050

Del.quantity cm3/: 223.0...227.0 1000 s: (220.0...230.0)

cm3 : 8.00 1000 s: (12.0) Spread

Aneroid pressure h: -

Speed rpmin: 500
Del.quantity cm3/: 130.0...132.0
1000 s: (127.0...135.0)

Spread

cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.90

Speed rom : 1090...1106

2nd version 1mm rack travel less than full load rack tr: 12.80 Speed rpm : 1090...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 255.0...275.0 1000 s: (251.0...279.0)

Remarks:

Values of version 1 only apply to regulators with LDA spring 2 424 619 110.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 26.10.93 Edition : 10.92 Replaces : ISO-4113 Test oil Combination no. : 0 402 646 997 Injection pump Pump designation : PE6P12OA32OLS7852 EP type number : 0 412 626 871 Governor Governor design. : RQV300...950PA1033-5 : 0 421 814 008 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M441 LA : 250.0 1st version kW : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 105 Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 075 Outside diameter x Wall thickness : 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _ BEGINNING OF DELIVERY Test pressure, bar: 25...27 E18

: 5.20...5.30 Prestroke mm : (5.15...5.35) Rack travel in mm : 20.00...21.00 : 6-3-5-2-4-1 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 600 Rack travel in mm : 14.00...14.10 Del.quantity cm3/: 23.4...23.6 100 s: (23.1...23.9) cm3 : 0.5Spread 100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm: 5.6...6.2 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6Spread 100 s: (1.0) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.00...1.50 travel mm rpm : 575 2nd speed : 4.20...4.70 travel mm 3rd speed rpm : 790 travel mm : 5.90...6.40 rpm : 1010 4th speed : 8.00...8.50 travel mm rpm : 1200 5th speed travel mm : 11.00...12.00 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1075 Speed Rack travel in mm : 11.70...14.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 600 Speed

Aneroid pressure h: 1100

Del.quantity : 234.0...239.0) hPa : 1100 Pressure Rack travel mm : 14.00...14.10 cm3 : 5.00 Spread 1000 : (9,00) Measurement 2nd version $1/\min : 400$ Speed Speed rpm : 600 Aneroid pressure h: 1100 1st pressure hPa : 550 Del.quantity cm3/: 234.0...236.0 1000 s: (231.0...239.0) Rack travel in m: 13.10...13.20 2nd pressure hPa : 250 cm3 : 5.00 Spread Rack travel in m: 11.00...11.20 1000 s: (9.00) 3rd pressure hPa : -Rack travel in m: 9.90...10.20 RATED SPEED 2th version Settina 1st version Speed : 500 CDM Control lever hPa Pressure Rack travel in mm : 10.1...10.4 position degrees: 116...124 Testing: Measurement 1st rack travel in: 13.00 : 500 Speed rom rpm : 990...1000 1st pressure hPa : 300 2nd rack travel in: 4.00 Rack travel in m: 10.8...10.9 2nd pressure hPa : 700 rpm : 1070...1100 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.40 Rack travel in m: 12.9...13.1 3rd pressure hPa : 1100 2nd version Rack travel in m: 14.0...14.1 Control Lever position degrees: 116...124 START CUT-OUT Testing: Speed 1/min : 240 (260) 1st rack travel in: 13.00 rpm : 990...1000 FUEL DELIVERY CHARACTERISTICS Speed 2nd rack travel in: 4.00 Speed rpm : 1070...1100 4th rack travel in: 1200 1st version Speed ram : 0.00...1.40 Aneroid pressure h: 1100 : 950 Speed **LDW** Del.quantity cm3/: 228.0...232.0 1000 s: (225.0...235.0) LOW IDLE 1 Control lever cm3 : 8.00 position degrees: 80...88 Spread 1000 s: (12.0) Aneroid pressure h: 550 Testing: : 200 Speed Speed : 400 rpm **m**gn Minimum rack trave: 8.10 Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) : 300 TO THE Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 : 410...470 COM 1000 s: (129.0...137.0) CONSTANT REGULATION cm3 : 8.00Spread rpm : 290...360 1000 s: (12.0) Speed Aneroid/Altitude 2nd version Compensator Test Aneroid pressure h: 1100 Speed rpm : 950 Del.quantity cm3/: 228.0...232.0 1st version 1000 s: (225.0...235.0) cm3 : 8.00 Setting Spread Speed rpm : 600 1000 s: (12.0)

Aneroid pressure h: -

Speed rpmin: 500
Del.quantity cm3/: 132.00...134.0
1000 s: (129.0...137.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 990...1000

2nd version 1mm rack travel less than full load rack tr: 13.00 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 255.0...275.0
 1000 s: (251.0...279.0)

Remarks:

Values of version 1 only apply to regulators with LDA spring 2 424 619 110.

Note remarks

Test sheet : MB Edition : 26.10.93 : 10.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 998

Injection pump

Pump designation : PE6P120A320LS7852 EP type number : 0 412 626 871

Governor

: RQV300...1050PA1033 Governor design.

~6

: 0 421 814 009 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM441 LA Engine

: 250.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

: 207...210 pressure, bar

Orifice plate

: 0.8 diameter mm

Test lines : 1 680 750 075

Outside diamster x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

mcm: 600 1st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed : 0.55...0.95 travel mm

: 575 2nd speed rpm

: 4.30...4.80 travel mm

3rd speed : 625 rpm

travel mm : 4.80...5.30 4th speed : 830 rpm

travel mm : 5.90...6.40

5th speed : 1190 rpm

travel mm : 9.90...10.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1170

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 14.00...14.10 1st version Speed nom : 600 Torque control curve - 2nd version Aneroid pressure h: 1100 Ameroid P. Del.quantity 1000 1st speed rpm : 1050 : 234.0...236.0 Rack travel in m: 13.8...14.0 : (231.0...239.0) 2nd speed rpm : 800 : 5.00 Rack travel in m: 14.0...14.2 Spread cm3 1000 : (9.00) 2nd version Aneroid/Altitude rpm : 600 Speed Compensator Test Aneroid pressure h: 1100 Del.quantity cm3/: 234.0...236.0 1000 s: (231.0...239.0) 1st version cm3 : 5.00 Spread Setting 1000 s: (9.00) Speed : 600 rpm hPa : 1100 Pressure RATED SPEED Rack travel mm : 14.00...14.10 1st version Measurement Control lever $1/\min : 400$ Speed position degrees: 116...124 1st pressure hPa : 550 Rack travel in m: 13.10...13.20 2nd pressure hPa : 250 Testina: 1st rack travel in: 12.90 rpm : 1090...1100 Rack travel in m: 11.00...11.20 Speed 2nd rack travel in: 4.00 3rd pressure hPa : -: 1165...1195 Speed Rack travel in m: 9.90...10.20 LIDW 4th rack travel in: 1300 2th version Speed rom : 0.00...1.50 Setting Speed : 500 rpm 2nd version Pressure. hPa Control lever Rack travel in mm : 10.0...10.3 position degrees: 116...124 Measurement : 500 Testing: Speed man. 1st rack travel in: 12.90 rpm : 1090...1105 1st pressure hPa : 300 Rack travel in m: 10.7...10.8 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 2nd pressure hPa : 700 Rack travel in m: 12.8...13.0 4th rack travel in: 1300 Speed rpm : 0.00...1.50 3rd pressure hPa : 1100 Rack travel in m: 14.0...14.1 LOW IDLE 1 Control lever START CUT-OUT position degrees: 78...86 Speed 1/min : 240 (260) Testina: Speed rpm : 200 FUEL DELIVERY CHARACTERISTICS Minimum rack trave: 8.70 : 300 CIDITI Rack travel in mm : 5.80...6.00 1st version Aneroid pressure h: 1100 CONSTANT REGULATION Speed : 1050 rpm Del.quantity cm3/: 223.0...227.0 1000 s: (220.0...230.0) rom : 300...400 Speed cm3 : 8.00 TORQUE CONTROL Spread Dimension a mm : 0.15 1000 s: (12.0) 2nd speed : 1050 Aneroid pressure h: 550 חסרו Rack travel in m: 13.80...14.00 Speed rpm : 400 3rd speed rpm

: 600

Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.00 1000 s: (12.0) 2nd version Aneroid pressure h: 1100 Speed rpm : 1050 Del.quantity cm3/ : 223.0...227.0 1000 s: (220.0...230.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpmin : 500 Speed Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.90 rpm : 1090...1100 Speed 2nd version 1mm rack travel less than full load rack tr: 12.90 rpm : 1090...1100 Speed Remarks: Values of version 1 only apply to regulators with LDA spring 2 424 619 110.

Note remarks

: MB Test sheet

: 30.04.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 812

Injection pump

Pump designation : PERP120A320LS7801-10

EP type number : 0 412 628 851

Governor

Governor design. : RQ300/1050PA717

: 0 421 801 258 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. :8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed

Rack travel in mm: 6.1...6.7 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.5

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 680

: 222.0...224.0 Del.quantity

1000 : (219.0...227.0)

Spread

cm3 : 4.00 1000 : (7.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 1st version Testing: Aneroid pressure h: 1150 1st rack travel in: 14.40 Speed rpm : 1050 Del.quantity cm3/: 225.0...229.0 1000 s: (222.0...232.0) rpm : 1095...1110 Speed 2nd rack travel in: 4.00 cm3 : 7.00 rpm : 1160...1190 Speed Spread 4th rack travel in: 1300 1000 s: (10.0) Aneroid pressure h: 1150 Speed rpm : 0.00...1.50Speed : 850 man Del.quantity cm3/: 243.0...247.0 LOW IDLE 1 1000 s: (240.0...250.0) cm3 : 7.00 Setting point w/out bumper spring rpm : 300 Speed Spread Rack travel in mm: 6.4 1000 s: (10.0) Aneroid pressure h: -Testina: Speed rpm : 500 Del.quantity cm3/: 146.0...148.0 Speed : 200 rpm Minimum rack trave: 8.00 1000 s: (143.0...151.0) cn3 : 7.00 rpm : 300 Speed Spread Rack travel in mm : 6.10...6.70 1000 s: (10.0) Rack travel in mm: 2.00 Speed : 380...420 COM BREAKAWAY TORQUE CONTROL Dimension a mm : 0.90 1st version : 1050 2nd speed rom 1mm rack travel less than Rack travel in m: 15.20...15.40 3rd speed rpm : 850 full load rack tr: 14.40 Rack travel in m: 15.80...16.10 Speed rpm : 1095...1110 Ameroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1st version Settina 1000 s: (196.0...224.0) Speed : 600 rpm Remarks: Pressure hPa : 680 : 14.70...14.90 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : 310 Rack travel in m: 12.10...12.30 2nd pressure hPa : 470 Rack travel in m: 13.70...13.90 3rd pressure hPa : 820 Rack travel in m: 14.90...15.00 4th pressure hPa : 950 Rack travel in m: 15.60...16.00 5th pressure hPa : -Rack travel in m: 11.30...11.60 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet

: 30,04,92 Edition

Replaces

: ISO-4113 Test oil

: 0 402 648 818 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801-10

EP type number : 0 412 628 851

Governor

Governor design. : RQ300/950PA762-1

Governer no. : 0 421 801 304

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : 0M442 LA

: 298.0 1st version kw : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1,50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.20...14.40

Del.quantity cm3/: 21.0...21.2

100 s: (20.7...21.5)

cm3 : 0.5Spread

100 s: (0.9)

npm : 300.0 2nd speed

Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.2...2.0

100 s: (0.9...2.3)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-Lever position Degree: -2

rpm : 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 750

Del.quantity : 210.0...212.0

1000 : (207.0...215.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 1st version Aneroid pressure h: 1050 Speed rpm : 950
Del.quantity cm3/ : 211.0...214.0
1000 s: (208.0...217.0) Testing: 1st rack travel in: 13.00 rpm : 990...1010 Speed 2nd rack travel in: 4.00 cm3 : 8.00 Spread rpm : 1060...1090 1000 s: (12.0) Speed 4th rack travel in: 1200 Aneroid pressure h: 1050 Speed rpm : 0.00...1.50Speed rpm : 800 Del.quantity cm3/: 225.0...228.0 1000 s: (222.0...231.0) LOW IDLE 1 cm3 : 8.00 Setting point w/out bumper spring Spread Speed rpm : 300 1000 s: (12.0) Rack travel in mm: 5.9 Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/ : 152.0...154.0
1000 s: (149.0...157.0) Testing: Speed rpm : 100 Minimum rack trave: 7.50 cm3 : 8.00 Spread rpm : 300 1000 s: (12.0) Rack travel in mn : 5.80...6.00 Rack travel in mm: 2.00 Speed rpm : 365...405 **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm :? 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 950 full load rack tr: 13.00 rpm : 990...1010 Rack travel in m: 14.00...14.20 Speed 2nd speed rpm : 925 Rack travel in m: 14.20...14.40 STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test Speed rpm : 100 Del.quantity cm3/: 180.0...195.0 1000 s: (176.0...199.0) 1st version Setting Remarks: : 600 Speed rpm hPa : 750 Pressure : 14.20...14.40 Rack travel mm * Increase in control-rod travel with respect to setting at least 0.1 mm Measurement Speed 1/min: 600 1st pressure hPa : 320 Rack travel in m: 11.80...12.00 2nd pressure hPa : 420 Rack travel in m: 13.40...13.60 3rd pressure hPa : 850 Rack travel in m: 14.30...14.40 * 4th pressure hPa : -Rack travel in m: 11.50...11.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 30.04.92 Replaces Test oil : ISO-4113 Combination no. : 0 402 648 819 Injection pump Pump designation: PE8P120A320LS7801-10 EP type number : 0 412 628 851 Governor Governor design. : RQ300/900PA762-2 Governer no. : 0 421 801 305 Customer-spec. information Customer : DAIMLER-BENZ Engine : 0M442 LA TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 019 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-4-1

270-315 Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

Spread

1st speed rpm: 900
Rack travel in mm: 13.00...13.10

Del.quantity cm3/: 19.2...19.5

100 s: (18.9...19.8)

100 s: (0.9)

cm3 : 0.5

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.2...2.0

100 s: (0.9...2.3)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position Degree: -2

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 900 Aneroid pressure h: 750

Del.quantity : 192.0...195.0 1000 : (189.0...198.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10 rpm : 940...955 Speed 2nd rack travel in: 4.00 rpm : 1020...1050 Speed 4th rack travel in: 1150 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.0 Testina: rpm : 100 Speed Minimum rack trave: 7.60 Speed rpm : 300 Rack travel in mm : 5.90...6.10 Rack travel in mm: 2.00 Speed rpm : 365...405 TORQUE CONTROL Dimension a mm : 1.20 1st speed rpm : 900 2nd speed rpm : 600

Torque control curve - 1st version Rack travel in m: 13.00...13.10 Rack travel in m: 14.20...15.40 3rd speed rpm : 850 Rack travel in m: 13.50...13.80

Ameroid/Altitude Compensator Test

1st version Setting Speed : 500 rom: Pressure hPa : -

: 11.20...11.40 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 300

Rack travel in m: 11.70...11.80

2nd pressure hPa : 450

Rack travel in m: 13.20...13.40

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750 rpm : 600

Del.quantity cm3/: 209.0...211.0 1000 s: (206.0...214.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 153.0...155.0 1000 s: (150.0...158.0)

cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 940...955

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 175.0...190.0

:

1000 s: (171.0...194.0)

Remarks:

F01

Note remarks

Test sheet

Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 824

Injection pump

Pump designation : PE8P120A320LS7801-10

EP type number : 0 412 628 851

Governor

: RQV300...1050PA797 Governor design.

Governer no. : 0 421 813 532

Customer spec. information

Customer : DAIMLER-BENZ

Engine : 0M442 LA

1st version kW : 320.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6-3- 5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm: 6.2...6.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.5Spread 100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.40 travel mm

2nd speed rpm : 600

: 4.90...5.10 travel mm

rpm : 1075 3rd speed

: 7.40...7.60 travel mm

4th speed rpm : 1100

travel mm : 8.00...8.20

5th speed rpm : 1150

: 9.00...9.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1125

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

3rd pressure hPa : 820 Rack travel in m: 14.90...15.00 1st version 4th pressure hPa : 1100 Speed rpm : 600 Aneroid pressure h: 680 Rack travel in m: 15.90...16.00 Del.quantity : 221.0...223.0 5th pressure hPa : -1000 : (218.0...226.0) Rack travel in m: 11.40...11.70 Spread cm3 : 4.00 1000 : (7.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 117...125 1st version Aneroid pressure h: 1150 Testing: 1st rack travel in: 14.20 rpm : 1050 Speed rpm : 1095...1110 Del.quantity cm3/: 229.0...232.0 Speed 2nd rack travel in: 4.00 1000 s: (226.0...235.0) rpm : 1160...1190 cm3 : 7.00Spread 1000 s: (10.0) Aneroid pressure h: 1150 4th rack travel in: 1300 Speed rpm : 0.00...1.50: 850 rpm LOW IDLE 1 Del.quantity cm3/: 246.0...250.0 Control lever 1000 s: (243.0...253.0) position degrees: 82...90 Spread cm3 : 7.001000 s: (10.0) Testing: Aneroid pressure h: -Speed Speed rpm : 500 Del.quantity cm3/: 148.0...150.0 : 100 מוסרו Minimum rack trave: 7.90 1000 s: (145.0...153.0) : 300 תכרו Rack travel in mm : 6.20...6.40 Spread cm3 : 7.001000 s: (10.0) CONSTANT REGULATION rom : 300...500 Speed **BREAKAWAY** TORQUE CONTROL Dimension a mm : 0.40 1st version 2nd speed rpm : 1050 1mm rack travel less than Rack travel in m: 15.20...15.40 3rd speed rpm : 850 full load rack tr: 14.20 Rack travel in m: 15.80...16.10 rpm : 1095...1110 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1st version Setting 1000 s: (196.0...224.0) Speed : 600 rpm Pressure hPa : 680 Remarks: Rack travel mm : 14.70...14.90 : Measurement 1/min: 600 Speed 1st pressure hPa : 310 Rack travel in m: 12.10...12.30 2nd pressure hPa : 470 Rack travel in m: 13.70...13.90

Note remarks

Test sheet : MB

Edition : 30.04.92

Replaces : -

Test oil : ISO-4113

combination no. : 0 402 648 832

Injection pump

Pump designation: PE8P120A320LS7810-10

EP type number : 0 412 628 852

Governor

Governor design. : RQ300/1050PA858 Governer no. : 0 421 801 398

Customer-spec, information

Customer : DAIMLER-BENZ

Engine : 0M442 LA

1st version kW : 368.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 19.50...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.30...14.50

Del.quantity cm3/: 23.9...24.1

100 s: (23.6...24.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed . rpm : 300.0

Rack travel in mm : 5.2...5.5 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

peed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 600 Aneroid pressure h: 900

Del.quantity : 239.0...241.0

1000 : (236.0...244.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Aneroid pressure h: 1500 Testing: 1st rack travel in: 14.10 rpm : 1095...1110 Speed Spread 2nd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1300 Speed rpm Speed rpm : 0.00...1.50 LOW IDLE 1 Spread Setting point w/out bumper spring Speed rpm Rack travel in mm: 5.3 Testing: Speed : 200 (DO) Spread Minimum rack trave: 7.40 rpm : 300 Rack travel in mm : 5.20...5.50 Rack travel in mm : 2.00 BREAKAWAY : 340...380 Speed חכח 1st version TORQUE CONTROL Dimension a mm : 0.35 2nd speed rpm : 1050 Rack travel in m: 15.10...15.30 Speed 3rd speed rpm : 800 Rack travel in m: 13.30...15.50 Aneroid/Altitude Speed rpm : 100 Del.quantity cm3/: 240.0...260.0 Compensator Test 1st version Setting Remarks: Speed rpm : 600 hPa : 900 Pressure : 14.30...14.50 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 320 Rack travel in m: 10.20...10.40 2nd pressure hPa : 620 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1100 Rack travel in m: 14.40...14.50 4th pressure hPa : -Rack travel in m: 8.40...8.70 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Speed rpm : 1050 Del.quantity cm3/: 257.0...260.0 1000 s: (254.0...263.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1500 : 800 Del.quantity cm3/: 265.0...269.0 1000 s: (262.0...272.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 133.0...135.0 1000 s: (130.0...138.0) cm3 : 8.00 1000 s: (12.0)

1mm rack travel less than

full load rack tr: 14.10

rpm : 1095...1110

STARTING FUEL DELIVERY

1000 s: (236.0...264.0)

* Increase in control-rod travel with respect to setting at least 0.1 mm

1st version

Note remarks

Test sheet

Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 864

Injection pump

Pump designation: PE8P120A320LS7816-10

EP type number : 0 412 628 836

Governor

Governor design. : RQ300/950PA762-7

Governer no. : 0 421 801 480

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 353.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

: 254.0...256.0 Del.quantity

1000 : (251.0...259.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 1st version Testina: Aneroid pressure h: 1600 1st rack travel in: 14.20 Speed rpm : 950 Del.quantity cm3/: 270.0...273.0 Speed rpm : 990...1005 2nd rack travel in: 4.00 1000 s: (267.0...276.0) rom : 1070...1100 Speed Spread cm3 : 8.004th rack travel in: 1150 1000 s: (12.0) Aneroid pressure h: 1600 rpm : 0.00...1.50 Speed Speed : 800 rpm LOW IDLE 1 Del.quantity cm3/: 270.0...274.0 Setting point w/out bumper spring 1000 s: (267.0...277.0) : 300 cm3 : 8.00 mon Spread Rack travel in mm: 6.2 1000 s: (12.0) Aneroid pressure h: -Testina: rpm : 500 Speed Del.quantity cm3/: 145.0...147.0 Speed : 200 COM Minimum rack trave: 7.80 1000 s: (142.0...150.0) rpm : 300 cm3 : 8.00 Spread Rack travel in mm : 5.90...6.50 Rack travel in mm : 2.00 1000 s: (12.0) rpm : 380...420 Speed **BREAKAWAY** TORQUE CONTROL Dimension a mm : 0.90 1st version 2nd speed rpm : 950 1mm rack travel less than Rack travel in m: 15.20...15.40 3rd speed rpm : 800 full load rack tr: 14.20 Rack travel in m: 15.50...15.70 rpm : 990...1005 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed : 100 rpm Del.quantity cm3/: 240.0...260.0 1st version Settina 1000 s: (236.0...264.0) Speed rpm : 600 Pressure hPa : 1000 Remarks: : 14.60...14.80 Rack travel mm : Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 12.20...12.40 2nd pressure hPa : 700 Rack travel in m: 13.80...14.00 3rd pressure hPa : 1200 Rack travel in m: 14.80...15.00 4th pressure hPa : 1500 Rack travel in m: 15.50...15.70 5th pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT 1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB Edition : 30.04.92

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 648 871

Injection pump

Pump designation : PE8P12OA320LS7801-10

EP type number : 0 412 628 851

Governor

Governor design. : RQ300/1050PA932 Governor no. : 0 421 801 494

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)
Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.4

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 eed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 500

Aneroid pressure h: 650

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 1st version Testing: Aneroid pressure h: 1050 1st rack travel in: 11.80 rpm : 1050 Speed nom: 1095...1110 Del.quancity cm3/: 180.0...183.0 Speed 1000 s: (177.0...186.0) 2nd rack travel in: 4.00 rpm : 1170...1200 cm3 : 8.00Speed Spread 4th rack travel in: 1300 1000 s: (12.0) rom : 0.00...1.50Aneroid pressure h: 1050 Speed Speed rpm : 700 Del.quantity cm3/: 215.0...219.0 1000 s: (212.0...222.0) LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Spread cm3 : 8.00 Rack travel in mm: 6.2 1000 s: (12.0) : 850 Speed (Call Testing: Del.quantity cm3/: 206.0...210.0 rpm : 200 1000 s: (203.0...213.0) Speed cm3 : 8.00 Minimum rack trave: 8.00 Spread rpm : 300 1000 s: (12.00 Rack travel in mm: 6.00...6.40 Aneroid pressure h: -Rack travel in mm: 2.00 rpm : 500 Speed Del.quantity cm3/: 149.0...151.0 rpm : 380...420 Speed 1000 s: (146.0...154.0) cm3 : 8.00 TORQUE CONTROL Spread Dimension a mm : 0.75 1000 s: (12.0) : 1050 2nd speed rpm Rack travel in m: 12.80...13.00 3rd speed rpm : 850 **BREAKAWAY** Rack travel in m: 13.70...14.00 4th speed rpm : 700 1st version Rack travel in m: 14.40...14.60 1mm rack travel less than Aneroid/Altitude full load rack tr: 11.80 Compensator Test Speed rpm : 1095...1110 STARTING FUEL DELIVERY 1st version Setting : 600 Speed Speed rpm: rpm : 100 Del.quantity cm3/: 175.0...190.0 1000 s: (171.0...194.0) hPa : 650 Pressure : 14.10...14.30 Rack travel mm Measurement Remarks: 1/min: 600 Speed 1st pressure hPa : 300 * Increase in control-rod travel with Rack travel in m: 12.40...12.60 respect to setting at least 0.1 mm 2nd pressure hPa : 400 Rack travel in m: 13.40...13.70 3rd pressure hPa : 850 Rack travel in m: 14.20...14.30 * 4th pressure hPa : -Rack travel in m: 11.40...11.70 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : SCA : 22.01.93 Edition

Replaces Test oil : ISO-4113

Combination no. : 0 402 648 873

Injection pump

Pump designation: PE8P120A920/4LS7166

EP type number : 0 412 628 832

Governor

Governor design. : RQ900PA758-13 Governer no. : 0 421 801 501

Customer-spec. information Customer : SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 638 901 019 assembly

Openina.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-

6 - 8

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 24.6...24.8

100 s: (24.3...25.1)

cm3 : 0.7Spread

100 s: (1.0)

mom : 500 2nd speed

Rack travel in mm : 10.0...10.4 Del.quantity cm3/: 15.8...16.2

100 s: (15.6...16.4)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 900

246.0...248.0 1000 : (243.0...251.0) Del.quantity

: 7.00 Spread cm3 1000 : (10.00)

RATED SPEED

1st version

Control lever

position degrees: 82...90

Testing:

1st rack travel in: 11.50 rpm : 900...905 Speed 2nd rack travel in: 4.00

rpm : 941...950 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 900 Pressure

F10

Rack travel mm : 12.50...12.60

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.40
2nd pressure hPa : 365
Rack travel in m: 11.80...11.90
3rd pressure hPa : 215

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/: 158.0...162.0 1000 s: (156.0...164.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.50

rpm : 900...905 Speed

HIGH IDLE

1st version

Rack travel in mm : 5.00...5.20

cm3 : 4.00 Spread

1000 s: (7.00)

Remarks:

Start-of-delivery setting with ROBO

diaphragm.

APPLICATION

Generator

Generator set

Note remarks

Test sheet

Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 876

Injection pump

Pump designation : PE8P12DA320LS7816-10

EP type number : 0 412 628 836

Governor

Governor design. : RQ300/1050PA932-9

Governer no. : 0 421 801 509

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

1st version kW : 353.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

4- 1

Phasina : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 900

Del.quantity : 234.0...237.0

1000 : (231.0...240.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0 Del.quantity cm3/: 252.0...256.0 1000 s: (249.0...259.0) Testing: cm3 : 8.00Spread 1st rack travel in: 13.30 1000 s: (12.0) Aneroid pressure h: 1600 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 850 Speed Speed rpm : 1150...1180 4th rack travel in: 1300 Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) rpm : 0.00...1.50 cm3 : 8.00Speed Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: -Setting point w/out bumper spring Speed rpm : 500 Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0) Speed rom : 300 Rack travel in mm: 6.2 cm3 : 8.00 Spread Testing: 1000 s: (12.0) Speed : 200 man Minimum rack trave: 7.80 : 300 COM BREAKAWAY Rack travel in mm: 5.90...6.50
Rack travel in mm: 2.00
Speed rpm: 380...420 1st version 1mm rack travel less than TORQUE CONTROL full load rack tr: 13.30 : 0.40 rpm : 1095...1110 Dimension a mm Speed 2nd speed rpm : 1050 Rack travel in m: 14.30...14.50 STARTING FUEL DELIVERY 3rd speed rpm : 850 Rack travel in m: 15.00...15.30 Speed : 100 rpm Aneroid/Altitude Rack travel in mm: 10.20...10.50 Compensator Test Remarks: 1st version Settina * Increase in control-rod travel with Speed : 600 respect to setting at least 0.1 mm MOLL Pressure hPa : 900 Rack travel mm : 13.60...13.80 Measurement 1/min : 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050 Rack travel in m: 13.70...13.80 * 4th pressure hPa : 1350 Rack travel in m: 14.60...14.80 5th pressure hPa : -Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600

Speed

rpm : 1050

Note remarks

Test sheet : MB

Edition : 30.04.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 648 878

Injection pump

Pump designation: PE8P120A320LS7801-10

EP type number : 0 412 628 851

Governor

Governor design. : RQ300/950PA762-9

Governer no. : 0 421 801 510

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

1st version kW : 269.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.90X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

4- 1

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 peed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 500

Aneroid pressure h: 800

Del.quantity : 201.0...203.0 1000 : (198.0...206.0)

cm3 : 5.00

1000 : (9.00)

RATED SPEED

Spread

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Testina: 1st rack travel in: 11.90 Speed rpm : 990...1000 2nd rack travel in: 4.00 rpm : 1060...1090 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm: 6.2 Testina: Speed : 200 mqn Minimum rack trave: 8.00 : 300 Speed **CDM** Rack travel in mm : 6.00...6.40 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL : 0.75 Dimension a mm : 950 2nd speed rpm Rack travel in m: 12.90...13.10 3rd speed rpm : 800 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed FDM Pressure hPa : 800 : 14.00...14.20 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.80...12.00 2nd pressure hPa : 500 Rack travel in m: 13.30...13.60 3rd pressure hPa : 950 Rack travel in m: 14.10...14.20 * 4th pressure hPa : -Rack travel in m: 10.60...11.00 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1150 Speed rpm : 950 Del.quantity cm3/: 190.0...193.0 1000 s: (187.0...196.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1150 : 750 Speed rpm Del.quantity cm3/: 216.0...219.0 1000 s: (213.0...222.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rask tr: 11.90 Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 175.0...190.0 1000 s: (171.0...194.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

1st version

Note remarks

Test sheet

: 30.04.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 881

Injection pump

Pump designation: PE8P120A320LS7816-10

EP type number : 0 412 628 836

Governor

: RQV300...950PA797-13 Governor design.

Governer no. : 0 421 813 841

Customer-spec, information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

: 353.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.10...1.40 travel mm

2nd speed rpm : 700

travel mm : 5.50...6.00

: 1100 3rd speed rpm

: 8.30...8.80 travel mm

rpm : 1090 4th speed : 9.70...10.20 travel mm

rpm : 1190 5th speed

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1000

Rack travel in mm : 16.20...18.80

FULL LOAD DELIV. AT FULL LOAD STOP

3rd pressure hPa : 1200 1st version Rack travel in m: 14.80...15.00 4th pressure hPa : 1500 Rack travel in m: 15.50...15.70 Speed rum : 600 Aneroid pressure h: 1000 Del.quantity : 254.0...256.0 Del.quantity : 254.0...259.0) 5th pressure hPa : -Rack travel in m: 10.20...10.50 cm3 Spread : 6.00 1000 : (9.00)START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 120...128 1st version Aneroid pressure h: 1600 Testina: 1st rack travel in: 14.20 : 950 rpm rpm : 990...1000 Del.quantity cm3/: 270.0...273.0 Speed 2nd rack travel in: 4.00 1000 s: (267.0...276.0) rpm : 1080...1110 Speed Spread cm3 : 8.00 4th rack travel in: 1150 1000 s: (12.0) Aneroid pressure h: 1600 rpm : 0.00...1.00 Speed : 800 rpm LOW IDLE 1 Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) Control lever position degrees: 82...90 Spread cm3 : 8.00 1000 s: (12.0) Testing: Aneroid pressure h: -Speed Speed rpm : 500 Del.quantity cm3/: 145.0...147.0 COM : 200 Minimum rack trave: 7.80 rpm : 300 1000 s: (142.0...150.0) Rack travel in mm : 5.90...6.50 Spread cm3 : 8.00 1000 s: (12.0) CONSTANT REGULATION Speed rpm : 300...500 **BREAKAWAY** TORQUE CONTROL Dimension a mm 1st version 2nd speed rpm : 950 1mm rack travel less than Rack travel in m: 15.20...15.40 3rd speed rpm : 800 full load rack tr: 14.20 Rack travel in m: 15.50...15.70 Speed rpm : 990...1000 Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 1st version Del.quantity cm3/: 240.0...260.0 Setting 1000 s: (236.0...264.0) Speed man : 600 Pressure hPa : 1000 Remarks: : 14.60...14.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 12.00...12.20 2nd pressure hPa : 700

Rack travel in m: 13.80...14.00

Note remarks

Test sheet : MB

: 30.04.92 Edition

Replaces Test oil : ISO-4113

Combination no. : 0 402 648 882

Injection pump

Pump designation: PE8P120A320LS7801-10

: 0 412 628 851 EP type number

Governor

Governor design. : RQV300...950PA797-35

: 0 421 813 974 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

: 269.0 1st version kw : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina (

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.0...6.4

Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.10...1.50 travel mm

rpm : 600 2nd speed

travel mm : 4.80...5.30

rpm : 950 3rd speed

: 7.60...8.10 travel mm

rpm : 1050 4th speed

: 9.00...9.50 travel mm

5th speed rpm : 1100

: 9.90...10.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 990

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 500 Speed Aneroid pressure h: 1150 : 203.0...205.0 Del.quantity 1000 : (200.0...208.0) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 11.90 rpm : 990...1000 Speed 2nd rack travel in: 4.00 Speed rpm : 1060...1090 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 84...92 Testing: Speed rpm : 200 Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm : 6.00...6.40 CONSTANT REGULATION rom : 300...500 Speed TORQUE CONTROL Dimension a mm 2nd speed rpm : 950 Rack travel in m: 12.90...13.10 3rd speed rpm : 500 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : -: 10.60...11.00 Rack travel mm Measurement 1/min: 600 Speed

1st pressure hPa : 350 Rack travel in m: 11.00...11.20

Rack travel in m: 12.60...12.80

2nd pressure hPa : 500

START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1150 : 950 Speed rpm Del.quantity cm3/: 189.0...192.0 1000 s: (186.0...195.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 175.0...190.0 1000 s: (171.0...194.0) Remarks: :

Note remarks

Test sheet : MB : 30.04.92 Edition

Replaces

Test oil : ISC-4113

Combination no. : 0 402 648 889

Injection pump

Pump designation : PE8P120A320LS7816-10

EP type number : 0 412 628 836

Governor

Governor design. : RQ300/950PA932-2

: 0 421 801 526 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 362.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - " : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 25.5...25.7

100 s: (25.2...26.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

: 255.0...257.0 Del.quantity 1000 : (252.0...260.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Del.quantity cm3/: 266.0...269.0 Rack travel in mm: 20.0 1000 s: (263.0...272.0) cm3 : 8.00Testina: Spread 1st rack travel in: 14.20 1000 s: (12.0) rpm : 990...1005 Aneroid pressure h: 1600 Speed 2nd rack travel in: 4.00 rpm : 800 Speed Del.quantity cm3/: 267.0...271.0 1000 s: (264.0...274.0) rpm : 1070...1100 Speed 4th rack travel in: 1150 cm3 : 8.00 Speed rpm : 0.00...1.50 Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 141.0...143.0 1000 s: (138.0...146.0) Setting point w/out bumper spring rom : 300 Speed Rack travel in mm: 6.2 cm3 : 8.00 Spread 1000 s: (12.0) Testing: Speed : 200 **MCL** Minimum rack trave: 7.80 rpm : 300 BREAKAWAY Rack travel in mm: 5.90...6.50 Rack travel in mm: 2.00 Speed rpm: 380...420 1st version 1mm rack travel less than TORQUE CONTROL full load rack tr: 14.20 : 0.90 Dimension a mm rpm : 990...1005 Speed : 950 2nd speed rpm Rack travel in m: 15.20...15.40 STARTING FUEL DELIVERY : 800 3rd speed rpm Rack travel in m: 15.50...15.70 : 100 Speed rpm: Aneroid/Altitude Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Compensator Test Remarks: 1st version 4 6 Setting : 600 Speed nom hPa : 1000 Pressure Rack travel mm : 14.60...14.80 Measurement Speed 1/min: 600 1st pressure hPa : 350 Rack travel in m: 11.60...11.80 2nd pressure hPa : 700 Rack travel in m: 13.80...14.00 3rd pressure hPa : 1200 Rack travel in m: 14.80...15.00 4th pressure hPa : 1300 Rack travel in m: 15.20...15.40 5th pressure hPa : -Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600

Speed

: 950

MCN

Note remarks Test sheet

: MB

Edition Replaces

: 30.04.92

Test oil

: ISO-4113

Combination no.

: 9 402 648 890

Injection pump

Pump designation : PE3P120A320LS7801-10

EP type number Governor

: 0 412 628 851

Governor design: RQ300/950PA932-5

Governer no.

: 0 421 801 621

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: OM442 A

1st version kw

: 269.0

Rated speed

: 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order

: 8-7-2-6-3-5-

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed

rpm: 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.0...6.4 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 500

Aneroid pressure h: 1150

Del.quantity : 203.0...208.0)

cm3

rpm

: 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed

: 600

Del.quantity cm3/: 136.0...138.0 1000 s: (133.0...141.0) Rack travel in mm: 20.0 Testina: cm3 : 8.00 Spread 1st rack travel in: 11.90 1000 s: (12.0) rpm : 990...1000 Speed 2nd rack travel in: 4.00 Speed rpm : 1060...1090 BREAKAWAY 4th rack travel in: 1200 rpm : 0.00...1.50 Speed 1st version 1mm rack travel less than LOW IDLE 1 Setting point w/out bumper spring full load rack tr: 11.90 rpm : 300 Speed rpm : 990...1000 Rack travel in mm: 6.2 Remarks: Testing: : Speed : 200 rpm Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 6.00...6.40 Rack travel in mm : 2.00 Speed rpm : 380...420 TORQUE CONTROL Dimension a mm : 0.75 2nd speed rpm : 950 Rack travel in m: 12.90...13.10 3rd speed rpm : 800 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 MCD hPa : -Pressure : 10.60...11.00 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : 350 Rack travel in m: 11.00...11.20 2nd pressure hPa : 500 Rack travel in m: 12.60...12.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1150 Speed rpm : 950 Del.quantity cm3/: 189.0...192.0 1000 s: (186.0...195.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -

Speed

rpm : 500

Note remarks

Test sheet : MB

Edition : 26.10.93 Replaces : 21.08.92 Test oil : ISO-4113

Combination no. : 0 402 648 893X

Injection pump

Pump designation: PE8P120A320LS7835-10

EP type number : 0 412 628 853

Governor

Governor design. : RQ300/950PA971-2 Governer no. : 0 421 801 548

Cust. part no. : 0200746502

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4- 1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 14.60...14.80

Del.guantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 750 Aneroid pressure h: 1200

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Setting point: Speed LDW Rack travel in mm : 20.0 Testing: 1st rack travel in: 13.10 Speed rpm : 990...1006 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.49LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 6.2 Testing: Speed rpm : 200 Minimum rack trave: 7.50 Speed rpm -: 300 Rack travel in mm : 6.10...6.30 Rack travel in mm : 2.00 Speed rpm : 380...420 TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 14.65...14.75 2nd speed rpm : 950 Rack travel in m: 14.00...14.20 3rd speed rpm : 800 Rack travel in m: 14.60...14.80 Aneroid/Altitude Compensator Test 1st version Setting : 750 Speed rpm hPa : 1200 Pressure Rack travel mm : 14.65...14.75

1/min : 400

Rack travel in m: 10.95...11.15

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st pressure hPa : 550 Rack travel in m: ? 2nd pressure hPa : 250

3rd pressure hPa : -

1st version Aneroid pressure h: 1200 rpm : 950 Del.quantity cm3/: 215.5...219.5 1000 s: (211.5...222.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 550 : 400 Speed rpm Del.quantity cm3/: 188.5...191.5 1000 s: (185.5...194.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.10 rpm : 990...1006 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 40.0...70.0 1000 s: (36.0...74.0) Remarks:

Measurement Speed

Note remarks

Test sheet : MB

Edition : 26.10.93 : 21.08.92 Replaces : IS9-4113 Test oil

: 0 402 648 894X Combination no.

Injection pump

Pump designation: PE8P120A320LS7835-10

EP type number : 0 412 628 853

Governor

Governor design. : RQV300...950PA797-18

Governer no. : 0 421 813 886

: 0200740702 Cust. part no.

Customer-spec, information

: MERCEDES-BENZ Customer

: 0M402 LA Engine

1st version kW : 280.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter nm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2,50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

4- 1

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rom : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel mm

rpm : 567 2nd speed travel mm

: 4.40...4.90 : 780

3rd speed mgn

travel mm : 6.10...6.60

: 1009 4th speed rpm

: 8.30...8.80 travel mm

: 1092 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Dearee: -1 rpm : 980 Speed Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 750 Aneroid pressure h: 1200 Del.quantity : 250.0...235.0) Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 122...130 Testing: 1st rack travel in: 13.10 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1200 rpm : 0.00...1.40 Speed LOW IDLE 1 Control Lever position degrees: 80...88 Testing: Speed : 200 mom. Minimum rack trave: 7.50 Speed : 300 mom Rack travel in mm: 6.10...6.30 CONSTANT REGULATION riom : 250...360 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 14.65...14.75 2nd speed rpm : 950 Rack travel in m: 14.00...14.20 : 800 3rd speed rpm Rack travel in m: 14.60...14.80 Aneroid/Altitude Compensator Test 1st version Setting Speed nom : 750

1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: ? 2nd pressure hPa : 250 Rack travel in m: 10.95...11.15 3rd pressure hPa : -Rack travel in m: 10.30...10.60 START CUT-OUT 1/min : 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Ameroid pressure h: 1200 rpm : 950 Del.quantity cm3/: 215.5...219.5 1000 s: (212.5...222.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 550 : 400 Speed mqn Speed rpm : 400 Del.quantity cm3/ : 188.5...191.5 1000 s: (185.5...194.5) Aneroid pressure h: rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.10 rpm : 990...1000 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 200.0...230.0 1000 s: (196.0...234.0) Remarks: :

Measurement

Pressure

Rack travel mm

hPa : 1200

: 14.65...14.75

Note remarks

Test sheet : MB Edition : 26.10.93 Replaces : 26.02.93 Test oil : ISO-4113

Combination no. : 0 402 648 895X

Injection pump

Pump designation : PE8P120A320LS7835-10

EP type number : 0 412 628 853

Governor

Governor design. : RQ300/1050PA972-1 Governor no. : 0 421 801 545

Sust. part no. : 0180742102

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 750

Rack travel in am : 14.60...14.80

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.70...1.90

2nd speed rpm : 510

travel mm : 5.90...6.10 3rd speed rpm : 845

travel mm : 6.30...6.50

4th speed rpm : 1109 travel mm : 6.70...6.90

travel mm : 6.70. 5th speed rpm : 1270

th speed rpm : 1270 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 750 Aneroid pressure h: 1200 Del.quantity : 230.0...232.0 1000 : (227.0...235.0) Spread cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Setting point: Speed man. Rack travel in mm : 20.0 Testina: 1st rack travel in: 13.00 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.00...1.40 Speed LOW IDLE 1 Setting point w/out bumper spring man Rack travel in mm: 6.2 Testina: Speed : 200 COM Minimum rack trave: 7.80 rpm : 300 Rack travel in mm : 6.10...6.30 Rack travel in mm: 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.90...14.10 2nd speed : 800 rpm Rack travel in m: 14.60...14.80 3rd speed rpm : 750 Rack travel in m: 14.65...14.75 Aneroid/Altitude Compensator Test 1st version

: 750

mqn

hPa : 1200 Pressure Rack travel mm : 14.65...14.75 Measurement 1/min : 400 Speed 1st pressure hPa : 550 Rack travel in m: ? 2nd pressure hPa : 250 Rack travel in m: 11.15...11.35 3rd pressure hPa : -Rack travel in m: 10.10...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1050 Speed Del.quantity cm3/: 213.5...217.5 1000 s: (210.5...220.5) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 550 Speed : 400 rpm Del.quantity cm3/: 188.5...191.5 1000 s: (185.5...194.5) Aneroid pressure h: -: 500 rpm Del.quantity cm3/: 131.0...133.0 1000 s: (128.0...136.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 Speed rpm : 1090...1105 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 40.0...70.0 1000 s: (36.0...74.0) Remarks:

Setting Speed

Note remarks

Test sheet : MB 14,7 w 2 Edition : 29.11.91

: 09.91 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 898

Injection pump

Pump designation : PE8P120A320LS7838 EP type number : 0 412 628 848

Governor

Governor design. : RQ300/950PA971-4 : 0 421 801 558

Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

: 320.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.80...14.00

Del.quantity cm3/: 22.3...22.5

100 s: (22.0...22.8)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

: 223.0...225.0 Del.quantity

1000 : (220.0...228.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.50 Speed rpm : 990...1005 2nd rack travel in: 4.00 rom : 1070...1100 Speed 4th rack travel in: 1150 rom : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rom Rack travel in mm: 6.5 Testing: Speed : 200 CDM Minimum rack trave: 7.80 : 300 rpm Rack travel in mm: 6.20...6.80 Rack travel in mm: 2.00 Speed : 380...420 rom TORQUE CONTROL Dimension a mm 2nd speed rpm : 950 Rack travel in m: 14.50...14.70 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 900 Pressure Rack travel mm : 13.80...14.00 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.10...10.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1100 Rack travel in m: 13.90...14.10 * 4th pressure hPa : 1350 Rack travel in m: 14.70...15.00 5th pressure hPa : -Rack travel in m: 8.90...9.20 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1600 Speed rpm : 800 Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.50 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 8.90...9.20

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

1st version

Aneroid pressure h: 1600

rom : 950

Note remarks

Test sheet Edition

: MB : 03.12.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 898

Injection pump

Pump designation: PE8P120A320LS7838-10

EP type number : 0 412 628 854

Governor

Governor design. : RQ300/950PA971-4

: 0 421 801 558 Governer no.

Customer-spec, information

: MERCEDES-BENZ Customer

: 0M442 A Engine

1st version kW : 320.0 : 1900 Rated speed

FEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.80...14.00

Del.quantity cm3/: 22.3...22.5

100 s: (22.0...22.8)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6Spread

109 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 223.0...225.0

1000 : (220.0...228.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed LDW.

Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.50 rpm : 990...1005 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 4th rack travel in: 1150 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 7.80 Speed rpm : 300 Rack travel in mm: 6.20...6.80 Rack travel in mm: 2.00 rpm : 380...420 Speed TORQUE CONTROL Dimension a mm :? 2nd speed rpm : 950 Rack travel in m: 14.50...14.70 3rd speed: rpm : 800 Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 מוכניו Pressure hPa : 900 Rack travel mm : 13.80...14.00 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.10...10.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1100 Rack travel in m: 13.90...14.10 * 4th pressure hPa : 1350 Rack travel in m: 14.70...15.00 5th pressure hPa : -Rack travel in m: 8.90...9.20 FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1600 Speed rpm : 800 Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.50 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 8.90...9.20

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Aneroid pressure h: 1600

rpm : 950

Note remarks

Test sheet : MB

Edition : 21.10.93 Replaces : 11.92 Test oil : ISO-4113

Combination no. : 0 402 648 898x

Injection pump

Pump designation : PE8P12OA32OLS7838-10

EP type number : 0 412 628 854

Governor

Governor design. : R0300/950PA971-4 Governor no. : 0 421 801 558

Cust. part no. : 0200743402

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 23.7...23.9

100 s: (23.4...24.2)

Spread cm3 : 0.6

100 s: (0.9)

2rd speed rpm : 300.0 Rack travel in mm : 6.2...6.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1200

Del.quantity : 237.0...239.0

1000 : (234.0...242.0)

Spread cm3 : 6.00 1000 : (9.00)

RATED SPEED

1st version Setting point: Speed COD Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.30 rpm : 990...1006 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1150 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed : 200 mqn Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 nom : 380...420 Speed TORQUE CONTROL Dimension a mm 2nd speed rpm : 950 Rack travel in m: 14.20...14.40 3rd speed rpm : 600 Rack travel in m: 14.40...14.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1200 Pressure : 14.40...14.50 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 12.55...12.65 2nd pressure hPa : 250 Rack travel in #: 9.80...10.80 3rd pressure hPa : -

Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1200

rpm : 950 Speed Del.quantity cm3/: 230.0...234.0 1000 s: (227.0...237.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: -Speed npm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.30 Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 8.90...9.30

Remarks:

•

1st version

Note remarks

Test sheet : MB

Edition : 26.10.93 Replaces : 18.12.92 Test oil : ISO-4113

Combination no. : 0 402 648 899

Injection pump

Pump designation: PE8P120A320LS7839-10

EP type number : 0 412 628 855

Governor

Governor design. : RQ300/950PA971-5

Governer no. : 0 421 801 559

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 370.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)
Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4- 1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 15.10...15.30

Del.quantity cm3/: 26.5...26.7

100 s: (26.2...27.0)

Spread cm3:0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.6

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 st (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Speed rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 900

Aneroid pressure n: YUU Del.quantity : 265.0...267.0

1000 : (262.0...270.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Testing: 1st rack travel in: 15.50 Speed rpm : 990...1006 2nd rack travel in: 4.00 rpm : 1075...1105 Speed 4th rack travel in: 1150 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.3 Testing: Speed rpm : 200 Minimum rack trave: 7.60 Speed rpm : 300 Rack travel in mm: 6.20...6.40 Rack travel in mm: 2.00 Speed rpm : 370...410 Aneroid/Altitude Compensator Test 1st version Setting Speed : 550 man hPa : 900 Pressure Rack travel mm : 15.10...15.30 Measurement $1/\min : 400$ Speed 1st pressure hPa : 550 Rack travel in m: 12.90...13.00 2nd pressure hPa : 250 Rack travel in m: 10.15...10.25 3rd pressure hPa : 900 Rack travel in m: 15.10...15.30 4th pressure hPa : 1100 Rack travel in m: 15.30...15.40 * 5th pressure hPa : -Rack travel in m: 9.10...9.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 2000 rpm : 950 Speed Del.quantity cm3/: 281.0...284.0 1000 s: (278.0...287.0) cm3 : 8.00Spread 1000 s: (12.0)

Del.quantity_cm3/ : 271.5...274.5 1000 s: (268.5...277.5) Spread cm3 1000 s: (-) Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Spread cm3:-1000 s: (-) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.30 Speed rpm : 990...1006

STARTING FUEL DELIVERY

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Aneroid pressure h: 1300

rpm : 700

Note remarks

Test sheet : MB

Edition : 30.04.92 Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 648 901

Injection pump

Pump designation: PE8P120A320LS7840-10

EP type number : 0 412 628 856

Governor

Governor design. : RQV300...1050PA797

-21

Governer no. : 0 421 813 894

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _____ BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)
Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4- 1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.30...13.50

Del.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) Spread cm3 : 0.8

npread cms : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.60 2nd speed rpm : 470 travel mm : 3.00...3.50

3rd speed rpm : 830

travel mm : 5.90...6.40 4th speed rpm : 1110

travel mm : 8.20...8.70 5th speed rpm : 1183

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1125 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP Rack travel in m: 12.60...12.80 3rd pressure hPa : 1050 1st version Rack travel in m: 13.40...13.50 * 4th pressure hPa : 1250 Rack travel in m: 14.00...14.20 Speed rpm : 600 Aneroid pressure h: 900 : 206.0...208.0 Del.quantity 1000 : (203.0...211.0) : 6.00 Spiread cti3 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1st version Control lever position degrees: 116...124 1st version Testina: 1st rack travel in: 11.90 Speed Speed rom : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1160...1190 Spread 4th rack travel in: 1300 Speed rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 84...92 Spread Testing: Speed : 200 Speed rom Minimum rack trave: 7.90 rom : 300 Rack travel in mm : 6.10...6.70 Spread CONSTANT REGULATION ricm : 300...450 Speed **BREAKAWAY** TORQUE CONTROL Dimension a mm 1st version rpm : 1050 2nd speed Rack travel in m: 12.90...13.10 3rd speed rpm : 800 Rack travel in m: 14.20...14.40 Speed Aneroid/Altitude Compensator Test Speed 1st version Setting : 600 Speed man hPa : 900 Pressure Remarks: Rack travel mm : 13.30...13.50 Measurement 1/min: 600 Speed 1st pressure hPa : 300

5th pressure hPa : -Rack travel in m: 10.60...10.80 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS Aneroid pressure h: 1500 : 1050 rpm Del.quantity cm3/: 194.0...197.0 1000 s: (191.0...200.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 חכרו : 800 Del.quantity cm3/: 220.0...224.0 1000 s: (217.0...227.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 500 Del.quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0) cm3 : 8.00 1000 s: (12.0) 1mm rack travel less than full load rack tr: 11.90 rpm : 1090...1100 STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) * Increase in control-rod travel with respect to setting at least 0.1 mm

Rack travel in m: 11.10...11.30

2nd pressure hPa : 650

Note remarks

Test sheet : MB

: 26.10.93 Edition : 18.12.92 Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 902

Injection pump

Pump designation : PE8P120A320LS7839-10

: D 412 628 855 EP type number

Governor

Governor design. : RQ300/1050PA972-5

: 0 421 801 564 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

1st version kW : 370.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length m

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 20.00...21.00 : 8- 7- 2- 6- 3- 5-Firing order

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 15.10...15.30

Del.quantity cm3/: 26.5...26.7

100 s: (26.2...27.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.0...6.6

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 900

Del.quantity : 265.0...267.0

1000 : (262.0...270.0)

: 6.00 cm3

1000 : (9.00)

RATED SPEED

Spread

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 Del.quantity cm3/: 271.0...274.0 1000 s: (268.0...277.0) Testing: cm3 : 3.00 Spread 1st rack travel in: 15.30 1000 s: (12.0) Speed rpm : 1090...1106 Aneroid pressure h: 2000 2nd rack travel in: 4.00 rpm : 800 Speed rpm : 1160...1190 Del.quantity cm3/: 283.0...287.0 1000 s: (280.0...290.0) 4th rack travel in: 1250 Speed rpm : 0.00...1.50 cm3 : 8.00 Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: 1300 Setting point w/out bumper spring rpm : 700 Del.quantity cm3/: 272.0...275.0 (000 s: (269.0...278.0) rpm : 300 Rack travel in mm: 6.3 cm3 : -Spread Testina: 1000 s: (-) Speed rpm : 200 Aneroid pressure h: -Minimum rack trave: 7.80 rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) rpm : 300 Rack travel in mm: 6.20...6.40 cm3 : 8.00 Rack travel in mm : 2.00 Spread rpm : 380...420 Speed 1000 s: (12.0) TORQUE CONTROL Dimension a mm :? BREAKAWAY 2nd speed rpm : 1050 Rack travel in m: 16.20...16.40 1st version 3rd speed rpm : 800 1mm rack travel less than Rack travel in m: 16.40...16.60 full load rack tr: 15.30 Aneroid/Altitude rpm : 1090...1106 Speed Compensator Test STARTING FUEL DELIVERY 1st version Setting : 100 Speed PD(I) Speed : 550 Rack travel in mm : 9.10...9.50 rom hPa : 900 Pressure Rack travel mm : 15.10...15.30 Remarks: Measurement Speed 1/min: 400 * Increase in control-rod travel with respect to setting at least 0.1 mm 1st pressure hPa : 550 Rack travel in m: 12.90...13.00 2nd pressure hPa : 250 Rack travel in m: 10.10...10.30 3rd pressure hPa : 1100 Rack travel in m: 15.30...15.40 * 4th pressure hPa : 1300 Rack travel in m: 15.70...15.80 5th pressure hPa : -Rack travel in m: 9.10...9.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 2000 Speed rpm : 1050

Note remarks

Test sheet : MB

: 27.10.93 Edition Replaces : 03.12.92 : ISO-4113 Test oil

Combination no. : 0 402 648 906X

Injection pump

Pump designation : PE8P120A320LS7838-10

EP type number : D 412 628 854

Governor

Governor design. : RQ300/1050PA972-6

: 0 421 801 569 Governer no.

Cust. part no. : 0200743602

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-Firing order

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 23.7...23.9

100 s: (23.4...24.2)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1200

: 237.0...239.0 Del.quantity

1000 : (234.0...242.0)

: 6.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Setting point: Speed

: 600 rpm Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30

rpm : 1090...1106 Speed

2nd rack travel in: 4.00

Speed rpm : 1165...1195

4th rack travel in: 1250

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 6.5

Testing:

Speed : 200 COM Minimum rack trave: 7.80 : 300 Speed nqn:

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 300...500 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 600

Rack travel in m: 14.40...14.50

rpm : 1050 2nd speed

Rack travel in m: 14.20...14.40

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 600 mqn hPa : 1200 Pressure

Rack travel mm : 14.40...14.50

Measurement

1/min: 400 Speed

1st pressure hPa : 550 Rack travel in m: 12.55...12.65

2nd pressure hPa : 250

Rack travel in m: 9.80...10.00

3rd pressure hPa : -

Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed : 1050 rpm

Del.quantity cm3/: 222.0...226.0

1000 s: (219.0...229.0)

Spread cm3 : 8.001000 s: (12.0)

Ameroid pressure h: 550

: 400 Speed man

Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0)

Aneroid pressure h: -Speed

: 500 rpm . Del.quartity cm3/: 132.0...134.0

1000 s: (129.0...137.0)

cm3 : 8.00Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

Speed rpm : 1090...1106

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Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 5.00...5.10 : (4.95..,5.15) Prestroke mm Rack travel in mm : 20.00...21.00 Note remarks Firing order : 8-7-2-6-3-5-Test sheet : 27.10.93 Edition Replaces : 18.12.92 Test oil : ISO-4113 Phasing : 0-45-90-135-180-225-Combination no. : 0 402 648 907 270-315 Tolerance + - * : 0.50 (0.75) Injection pump Pump designation : PE8P12CA32CLS7839-10 Time to cyl. no. : 8 EP type number : 0 412 628 855 Governor BASIC SETTING Governor design. : RQV300...950PA797-22 Governer no. : 0 421 813 909 1st speed rpm: 550 Customer-spec. information Rack travel in mm : 15.10...15.30 Customer : MERCEDS-BENZ Del.quantity cm3/: 26.5...26.7 : 0M442 LA Engine 100 s: (26.2...27.0) 1st version kW : 370.0 Rated speed : 1900 Spread cm3 : 0.6TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil 2nd speed rpm : 300.0inlet temp. °C : 38...42 Rack travel in mm: 6.0...6.6 Del.quantity cm3/: 1.6...2.2 Overflow valve 100 s: (1.3...2.5) : 1 417 413 025 cm3 : 0.6Spread 100 s: (1.0) Inlet press., bar: 1.50 (B) Setting of injection pump Overflow with governor quantity min. 1/h: 100...120 GUIDE SLEEVE TRAVEL Test nozzle holder rpm : 300 1st speed assembly : 1 688 901 105 : 1.00...1.50 travel mm 2nd speed rpm : 617 : 5.00...5.50 Openina travel mm rpm : 780 pressure, bar : 207...210 3rd speed travel mm : 6.10...6.60 rpm : 1010 4th speed Test lines : 1 680 750 075 travel mm : 8.30...8.80 : 1092 5th speed mari Outside diameter : 9.80...10.30 travel mm x Wall thickness x Length mm : 8.00x2.50x1000 GUIDE SLEEVE POSITION Control-lever position (A) Injection pump setting values Degree: -1 rpm : 1050 Insp. values in parentheses Speed Rack travel in mm : 15.20...17.80

Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

1st version rpm : 550 Speed

FULL LOAD DELIV. AT FULL LOAD STOP

Aneroid pressure h: 900

: 265.0...267.0 Del.quantity

1000 : (262.0...270.0)

cm3 : 6.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 118...126

Testing:

1st rack travel in: 15.50 rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1100...1130 Speed

4th rack travel in: 1200

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 82...90

Testing:

Speed : 200 man Minimum rack trave: 8.00 rpm : 300

Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 550 חכר Pressure hPa : 900

Rack travel mm : 15.00...15.40

Measurement

Speed 1/min: 400

1st pressure hPa : 550

Rack travel in m: 12.90...13.00

2nd pressure hPa : 250

Rack travel in m: 10.10...10.30

3rd pressure hPa : 1100

Rack travel in m: 15.20...15.40 *
4th pressure hPa : 1300
Rack travel in m: 15.60...15.70 *

5th pressure hPa : -

Rack travel in m: 9.10...9.40

START CUT-OUT

1/min: 240 (260) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000

: 950 Speed rpm

Del.quantity cm3/: 281.0...284.0

1**000** s: (278.0...287.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: 1300

Speed rph : 700 Del.quantity cm3/: 271.5...274.5 1000 s: (268.5...277.5)

Aneroid pressure h: 550

Speed rpm : 400

Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0)

Aneroid pressure h: -

: 500 Speed rom

Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0) cm3 : 3.00

1000 s: (12.0)

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 15.00

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 275.0...295.0

1000 s: (271.0...299.0)

Remarks:

* * N = 700

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 14,7 w 1 Edition : 27.03.92 Replaces : 04.91 Test oil : TSO-4113

Combination no. : 0 402 648 908

Injection pump

Pump designation: PESP120A320LS7838 EP type number : 0 412 628 848

Governor

Governor design. : RQV300...950PA797-23

: 0 421 813 910 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kw : 320.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.80...14.00

bel.quantity cm3/: 22.3...22.5

100 s: (22.0...22.8)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.4...5.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.00...1.50 travel mm

2nd speed rpm : 617

travel mm : 5.00...5.50

3rd speed rpm : 780

: 6.10...6.60 travel mm

4th speed rpm : 1009

: 8.30...8.80 travel mm

rpm : 1092 5th speed

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed mpm : 600 Aneroid pressure h: 900 : 223.0...225.0 Del.quantity 1000 : (220.0...228.0) cm3 : 6.00 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 120...128 Testing: 1st rack travel in: 13.50 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 82...90 Testing: Speed שכיו Minimum rack trave: 7.80 rpm : 300 Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rom : 300...500 Speed TORQUE CONTROL Dimension a mm : 0.70 : 950 2nd speed rpm Rack travel in m: 14.50...14.70 3rd speed rpm : 800 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 900 Pressure : 13.80...14.00 Rack travel mm Measurement Speed 1/min : 600 1st pressure hPa : 350 Rack travel in m: 9.80...10.00

3rd pressure hPa : 1100 Rack travel in m: 13.90...14.10 * 4th pressure hPa : 1350 Rack travel in m: 15.80...15.00 5th pressure hPa : -Rack travel in m: 9.10...9.30 START CUT-OUT Speed 1/min: 240 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 : 950 Speed CDM Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1600 : 800 Speed rpm Del. quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: -Speed mqn. Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.50 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm

2nd pressure hPa : 650

Rack travel in m: 12.80...13.00

Note remarks

Test sheet

Edition

: 10.04.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 648 908

Injection pump

Pump designation : PE8P120A320LS7838-10

EP type number Governor

: O 412 628 854

Governor design.

: RQV300...950PA797-23

Governer no.

: 0 421 813 910

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M442 LA

1st version kW

: 320.0

Rated speed

: 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 105

Opening 1

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 075

Outside diameter x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 8- 7- 2- 6- 3- 5-

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 13.80...14.00

Del.quantity cm3/: 22.3...22.5

100 s: (22.0...22.8)

Spread

cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.4...5.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.00...1.50

2nd speed rpm : 617

: 5.00...5.50 travel mm

3rd speed

travel mm

: 780 LDW.

travel mm

: 6.10...6.60

4th speed

: 1009 man

travel mm

: 8.30...8.80 rpm : 1092

5th speed travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 900 : 223.0...225.0 Del.quantity 1000 : (220.0...228.0) cm3: 6.00 Spread 1000 : (9.00)RATED SPEED 1st version Control Lever position degrees: 120...128 Testina: 1st rack travel in: 13.50 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1200 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 82...90 Testina: : 200 Speed rpm Minimum rack trave: 7.80 : 300 rom Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rpm : 300...500 Specia TORQUE CONTROL Dimension a mm : 0.70 : 950 2nd speed rpm Rack travel in m: 14.50...14.70 3rd speed rpm : 800 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 900 Pressure : 13.80...14.00 Rack travel mm Measurement 1/min: 600 Speed

3rd pressure hPa : 1100 Rack travel in m: 13.90...14.10 * 4th pressure hPa : 1350 Rack travel in m: 15.80...15.00 5th pressure hPa : -Rack travel in m: 9.10...9.30 START CUT-OUT Speed 1/min: 240 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 rpm : 950 Speed Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1600 : 800 Speed rpm Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -: 500 Speed יחכניו Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.50 rpm : 990...1000 Speed STARTING FUEL DELIVERY : 100 rpm Speed Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks:

* Increase in control-rod travel with

respect to setting at least 0.1 mm

1st pressure hPa : 350

2nd pressure hPa : 650

Rack travel in m: 9.80...10.00

Rack travel in m: 12.80...13.00

Note remarks

Test sheet

: 27.10.93 Edition : 27,11,92 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 908X

Injection pump

Pump designation : FE8P120A320LS7833-10

EP type number : 0 412 628 854

Governor

Governor design. : RQV300...950PA797-23

: D 421 813 910 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kw : 320.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14,40,...14,50

Del.quantity cm3/: 23.7...23.9

100 s: (23.4...24.2)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.4...5.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

rpm : 617 2nd speed

: 5.00...5.50 travel mm

3rd speed rpm : 780 travel mm : 6.10...6.60

rpm : 1009 4th speed

: 8.30...8.80 travel mm

5th speed : 1092 rpm

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Aneroid pressure h: 1200 : 237.0...239.0 Del.quantity 1000 : (234.0...242.0) : 6.00 Spread cm3 cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 120...128 Testing: 1st rack travel in: 13.30 Speed rpm : 990...1000 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed mqn. Minimum rack trave: 7.80 rpm : 300 Speed Rack travel in mm : 6.40...6.60 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rum : 600 Rack travel in m: 14.40...14.50 2nd speed rpm : 950 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed riom Pressure hPa : 1200 : 14.40...14.50 Rack travel mm Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 12.60...12.70 2nd pressure hPa : 250

1st version

rpm : 600

Speed

Rack travel in m: 9.80...10.00 3rd pressure hPa : -Rack travel in m: 8.90...9.20 START CUT-OUT Speed 1/min : 240 (260) FUEL DELIVERY CHARACTERISTICS 1st version Ameroid pressure h: 1200 : 950 rpm Del.quantity cm3/: 230.0...234.0 1000 s: (227.0...237.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.30 Speed rpm : 990...1000 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks: :

Note remarks

Test sheet : MB Edition : 30.04.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 648 909

Injection pump

Pump designation : PE8P120A320LS7840-10

EP type number : 0 412 628 856

Governor

Governor design. : RQ300/950PA971-6 Governor no. : 0 421 801 575

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

1st version kW : 250.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.40...13.60

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.4 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5) Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 peed rom : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 207.0...209.0

1000 : (204.0...212.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Del.quantity cm3/: 208.5...211.5 1009 s: (205.5...214.5) cm3 : 8.00Testing: Spread 1st rack travel in: 12.60 1000 s: (12.0) rpm : 990...1005 Speed Aneroid pressure h: 1500 2nd rack travel in: 4.00 Speed rpm : 800 Del.quantity cm3/: 225.0...229.0 rpm : 1070...1100 Speed 4th rack travel in: 1150 1000 s: (221.0...232.0) rpm : 0.00...1.50 Speed cm3 : 8.00 Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: -Setting point w/out bumper spring Speed rpm : 500 Del.quantity cm3/: 127.0...129.0 rpm : 300 Rack travel in mm: 6.5 1000 s: (124.0...132.0) Spread cm3 : 8.00Testina: 1000 s: (12.0) Speed : 200 CDM Minimum rack trave: 7.60 : 300 rom **BREAKAWAY** Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 1st version Speed rom : 380...420 1mm rack travel less than TORQUE CONTROL full load rack tr: 12.60 Dimension a mm Speed rpm : 990...1005 2nd speed rpm : 950 Rack travel in m: 13.50...13.70 Remarks: 3rd speed rpm : 800 Rack travel in m: 14.10...14.30 Aneroid/Altitude Compensator Test 1st version Setting Speed nom : 600 Pressure hPa : 800 : 13.40...13.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 345 Rack travel in m: 11.70...11.90 2nd pressure hPa : 600 Rack travel in m: 12.90...13.10 3rd pressure hPa : 1050 Rack travel in m: 13.60...13.70 4th pressure hPa : 1100 Rack travel in m: 13.90...14.10 5th pressure hPa : -Rack travel in m: 10.90...11.10 FUEL DELIVERY CHARACTERISTICS 1st version

Speed

Aneroid pressure h: 1500

rom : 950

Note remarks

Test sheet : MB

: 27.10.93 Edition Replaces : 18.12.92

Test oil : ISO-4113

Combination no. : 0 402 648 911

Injection pump

Pump designation: PE8P12OA32OLS7839-10

EP type number : 0 412 628 855

Governor

: RQV300...1050PA797 Governor design.

-27

: 0 421 813 916 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442 LA

: 370.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

dizmeter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm : 5501st speed

Rack travel in mm : 15.10...15.30

Del.guantity cm3/: 26.5...26.7

100 s: (26.2...27.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.0...6.6

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel mm

rpm : 558 2nd speed

: 4.30...4.80 travel mm : 820

3rd speed rpm

: 5.90...6.40 travel mm

: 1108 4th speed rom

: 8.30...8.80 travel mm

: 1183 5th speed rpm

: 8.30...8.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Speed

Degree: -1 rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP Rack travel in m: 10.10...10.30 3rd pressure hPa : 1300 Rack travel in m: 15.70...15.80 * 4th pressure hPa : 1100 Rack travel in m: 15.30...15.50 * 1st version rpm : 550 Speed Aneroid pressure h: 900 Del.quantity : 265.0...267.0 5th pressure hPa : -1000 : (262.0...270.0) Rack travel in m: 9.10...9.40 Spread cm3 : 6.00 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Control Lever position degrees: 118...126 1st version Testing: Aneroid pressure h: 2000 1st rack travel in: 15.30 : 1050 Speed rpm Del.quantity cm3/: 271.0...274.0 rpm : 1090...1100 2nd rack travel in: 4.00 1000 s: (268.0...277.0) rpm : 1175...1205 cm3 : 8.00Speed Spread 4th rack travel in: 1250 1000 s: (12.0) Speed Aneroid pressure h: 2000 rpm : 0.00...1.50: 800 Speed rjam -LOW IDLE 1 Del.quantity cm3/: 283.0...287.0 1000 s: (280.0...290.0) Control Lever cm3 : 8.00 position degrees: 76...84 Spread 1000 s: (12.0) Aneroid pressure h: 550 Testina: : 200 Speed Speed rpm : 400 **LDW** Del.quantity cm3/: 203.0...206.0 Minimum rack trave: 6.80 : 300 1000 s: (200.0...209.0) mon Rack travel in mm : 6.20...6.40 Aneroid pressure h: -Speed rpm : 500 Del.quaritity cm3/ : 132.0...134.0 CONSTANT REGULATION rpm : 300...450 1000 s: (129.0...137.0) Speed cm3 : 8.00Spread TORQUE CONTROL 1000 s: (12.0) Dimension a mm : 0.20 : 1050 2nd speed rpm Rack travel in m: 16.20...16.40 **BREAKAWAY** : 800 3rd speed rpm Rack travel in m: 16.40...16.60 1st version 1mm rack travel less than Aneroid/Altitude full load rack tr: 15.30 Compensator Test Speed rpm : 1090...1100 1st version STARTING FUEL DELIVERY Setting Speed rpm : 550 Speed rpm : 100 Del.quantity cm3/ : 275.0...295.0 Pressure hPa : 900 Rack travel mm : 15.10...15.30 1000 s: (271.0...299.0) Measurement 1/min: 400 Speed Remarks: : * N = 7001st pressure hPa : 550 Rack travel in m: 12.90...13.00 * Increase in control-rod travel with 2nd pressure hPa : 250 respect to setting at least 0.1 mm

Note remarks

Test sheet : MB

Edition : 26.02.93 Replaces : 08.92 Test oil : 150-4113

Combination no. : 0 402 648 914X

Injection pump

Pump designation: PE8P120A320LS7835-10

EP type number : 0 412 628 853

Governor

Governor design. : RQV300...1050PA797

-30

Governer no. : 0 421 813 921

Cust. part no. : 0180742202

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 A

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Firing order : 4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50 2nd speed rpm : 608

travel mm : 4.80...5.30

3rd speed rpm : 820

travel mm : 5.90...6.40

4th speed rpm : 1108

travel mm : 8.10...8.60

5th speed rpm: 1190

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1130 Speed Rack travel in mm: 12.60...15.20 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 750 Aneroid pressure h: 1200 Del. quantity : 250.0...235.0) : 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 13.00 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.40 LOW IDLE 1 Control lever position degrees: 82...90 Testina: Speed : 200 **m**cn Minimum rack trave: 7.80 : 300 MOM Rack travel in mm : 6.10...6.30 CONSTANT REGULATION rom : 300...500 Speed TORQUE CONTROL Dimension a mm : 0.60 rpm : 1050 2nd speed Rack travel in m: 13.90...14.10 3rd speed rpm : 800 Rack travel in m: 14.60...14.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 mqn Pressure hPa : -: 10.30...10.60 Rack travel mn

1st pressure hPa : 250 Rack travel in m: 11.20...11.30 2nd pressure hPa : 600 Rack travel in m: 13.30...13.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 1050 rpm Del.quantity cm3/: 213.5...217.5 1000 s: (210.5...220.5) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/: 188.5...191.5 1000 s: (185.5...194.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 131.0...133.0 1000 s: (128.0...136.0) Spread cm3 : 8.001000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed : 100 CDW. Del.quantity cm3/: 200.0...230.0 1000 s: (196.0...234.0) Remarks: :

Speed

Measurement

1/min: 500

Note remarks

Test sheet : MB

Edition : 27.10.93 Replaces : 26.02.93 Test oil : ISO-4113

Combinettion no. : 0 402 648 915X

Injection pump

Pump designation : PE8P120A320LS7835-10

EP type number : 0 412 628 853

Governor

Governor design. : RQ300/1050PA993-1 Governor no. : 0 421 801 582

Cust. part no. : 0200747202

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4- 1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 14.65...14.75

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

Spread cm3:0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750 Aneroid pressure h: 1200

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 6.00 1000 : (9.00)

....

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 13.00

rpm : 1090...1106 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1300

rpm : 0.00...1.40Speed

LOW IDLE 1

Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 6.2

Testing:

: 200 Speed mqn Minimum rack trave: 7.80 rpm : 300 Speed

Rack travel in mm : 6.10...6.30

Rack travel in mm : 2.00 rpm : 380...420 Sneed

TORQUE CONTROL

Dimension a mm : 0.70 rpm : 1050 2nd speed

Rack travel in m: 13.90...14.10

3rd speed rpm : 800

Rack travel in m: 14.60...14.80

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 750 rpm Pressure hPa : 1200

Rack travel mm : 14.65...14.75

Measurement

Speed $1/\min : 400$

1st pressure hPa : 550 Rack travel in m: ? 2nd pressure hPa : 250

Rack travel in m: 11.15...11.35

3rd pressure hPa : -

Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 1050 rpm

Del.quantity cm3/: 213.5...217.5 1000 s: (210.5...220.5)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 550 Speed rpm : 400

Del.quantity cm3/: 188.5...191.5

1000 s: (185.5...194.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 131.0...133.0 1000 s: (128.0...136.0)

cm3 : 8.00Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 200.0...230.0

1000 s: (196.0...234.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 25...27 Note remarks Prestroke mm : 4.50...4.60 : (4.45...4.65) Rack travel in mm : 9.00...12.00 Test sheet : MAN 14,5 e2 Edition : 08.10.91 : 8-7-2-6-3-5-Firing order Replaces : 06.91 Test oil : ISO-4113 Combination no. : 0 402 648 916A Phasina : 0-45-90-135-180-225-Injection pump 270-315 Pump designation : PE8P120A520LS7818-1 Tolerance + - * : 0.50 (0.75) EP type number : 0 412 628 857 Governor Time to cyl. no. : 8 Governor design. : RQV250...1150PA902 Governer no. : 0 421 813 720 BASIC SETTING Cust. part no. : 3-7007 1st speed rpm: 1050 Customer-spec. information Rack travel in mm : 12.80...12.90 Customer : MAN Del.quantity cm3/: 25.9...26.1 : D2848LXE 40 Engine 100 s: (25.6...26.4) : 500.0 1st version kW Rated speed : 2100 Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil rpm : 500 2nd speed inlet temp. °C : 38...42 Rack travel in mm: 8.9...9.1 Del.quantity cm3/: 14.9...15.1 Overflow valve 100 s: (14.6...15.4) : 1 417 413 025 cm3 : 0.5Spread 100 s: (0.9) rpm : 250 Inlet press., bar: 1.50 3rd speed Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 5.2...6.0 * Test nozzle holder : 1 688 901 019 100 s: (-) assembly Opening (B) Setting of injection pump : 207...210 pressure, bar with governor Orifice plate GUIDE SLEEVE TRAVEL rpm : 250 diameter mm : 0,8 1st speed : 1.40...1.60 travel mm rpm : 450 2nd speed Test lines : 1 680 750 067 : 3.40...4.00 travel mm 3rd speed rpm : 850 Outside diameter travel mm : 6.30...6.90 rpm : 1150 x Wall thickness 4th speed x Lerigth mm : 6.00x1.50x1000 : 9.40...9.60 travel mm rpm : 1450 5th speed (A) Injection pump setting values : 13.00...14.00 travel mm Insp. values in parentheses Set equal delivery quant. GUIDE SLEEVE POSITION

Control-lever position

Speed

Degree: -1

rpm : 1210

per values ___

BEGINNING OF DELIVERY

Rack travel in mm : 15.20...17.80 Speed 1/min: 200 (220) FULL LOAD DELIV. AT FULL LOAD STOP FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1050Speed 1st version Aneroid pressure h: 1300 Aneroid pressure h: -Spead *pm : 500
Del.quantity cm3/: 149.0...151.0
1000 s: (146.0...154.0) : 259.0...261.0 Del.quantity 1000 : (256.0...264.0) Spread : 5.00 cm3 1000 : (9.00) RATED SPEED BREAKAWAY 1st version 1st version Control lever 1mm rack travel less than position degrees: 118...126 full load rack tr: 11.80 Testing: rpm : 1090...1100 Speed 1st rack travel in: 11.80 rpm : 1090...1100 Speed STARTING FUEL DELIVERY 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1450 : 100 Speed rpm Del.quantity cm3/: 100.0...120.0 * Speed rom : 0.00...1.001000 s: (-) LOW IDLE 1 Control lever Speed rpm : 100 position degrees: 80...88 Del.quantity cm3/: 0 ** 1000 s: (-) Testing: Speed : 100 HIGH IDLE L DUI Minimum rack trave: 8.90 rpm : 250 1st version Rack travel in mm : 7.30...7.50 Speed rpm : 500 Rack travel in mm : 2.00 Rack travel in mm : 0.00...7.00 Del.quantity cm3/: 0 ** 1000 s: (-) Speed : 430...490 COM Aneroid/Altitude Compensator Test 2nd version Speed rpm : 500 Rack travel in mm : 0.00...7.50 1st version Del.quantity cm3/: < 50.0 ** 1000 s: (-) Setting Speed : 500 CDM. hPa : 1300 Pressure 3rd version Rack travel mm : 13.80...13.90 Speed rpm : 500 Rack travel in mm : 8.30...8.50 Del.quantity cm3/: 125.0...** Measurement Speed $1/\min : 500$ 1000 s: (-) 1st pressure hPa : -LOW IDLE Rack travel in m: 8.90...9.10 2nd pressure hPa : 100 rpm : 250 Speed Rack travel in m: 9.30...9.40 Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 52.0...60.0 * 1000 s: (-) 3rd pressure hPa : 470 Rack travel in m: 12.30...12.60 START CUT-OUT Remarks:

* applies to cylinders 2, 3, 4 and 8 ** applies for cylinders 1, 5, 6, and 7

APPLICATION

Note remarks

: MB Test sheet

: 27.10.93 Edition : 18.12.92 Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 917

Injection pump

Pump designation : PE8P120A320LS7839-10

Ep type number : 0 412 628 855

Governor

Governor design. : RQ300/1050PA993-3

Governer no. : 0 421 801 601

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 370.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm : 550 1st speed

Rack travel in mm : 15.10...15.30

Del.quantity cm3/: 26.5...26.7

100 s: (26.2...27.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.0...6.6

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 900

: 265.0...267.0 Del.quantity

1000 : (262.0...270.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 1st version Testing: Aneroid pressure h: 2000 1st rack travel in: 15.30 rpm : 1050 rpm : 1090...1106 Del.quantity cm3/: 271.0...274.0 Speed 2nd rack travel in: 4.00 1000 s: (268.0...277.0) Speed rpm : 1160...1190 4th rack travel in: 1250 cm3 : 8.00 Spread 1000 s: (12.0) Speed rpm : 0.00...1.50Aneroid pressure h: 2000 : 800 Speed rpm Del.quantity cm3/: 283.0...287.0 1000 s: (280.0...290.0) LOW IDLE 1 Setting point w/out bumper spring Speed cm3 : 8.00rpm Spread Rack travel in mm: 6.3 1000 s: (12.0) Aneroid pressure h: 550 Testing: Speed : 400 rpm Speed : 200 Del.quantity cm3/: 203.0...206.0 CDM 1000 s: (200.0...209.0) Minimum rack trave: 7.20 rpm : 300 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) Rack travel in mm: 6.20...6.40 Rack travel in mm : 2.00 Speed rpm : 380...420 Spread cm3 : 8.00TORQUE CONTROL 1000 s: (12.0) Dimension a mm : 1050 2nd speed rpm Rack travel in m: 16.20...16.40 **BREAKAWAY** 3rd speed rpm : 800 Rack travel in m: 16.40...16.60 1st version 1mm rack travel less than Aneroid/Altitude Compensator Test full load rack tr: 15,30 rpm : 1090...1106 Speed 1st version STARTING FUEL DELIVERY Settina Speed : 550 **LDW** hPa : 900 Pressure Speed : 100 rpm : 15.10...15.30 Del.quantity cm3/: 275.0...295.0 Rack travel mm 1000 s: (271.0...299.0) Measurement 1/min: 400 Speed Remarks: * N = 7001st pressure hPa : 550 Rack travel in m: 12.90...13.00 2nd pressure hPa : 250 Rack travel in m: 10.10...10.30 3rd pressure hPa : 1100 Rack travel in m: 15.30...15.50 * 4th pressure hPa : 1300 Rack travel in m: 15.70...15.80 * 5th pressure hPa : -Rack travel in m: 9.10...9.40 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet

: 27.10.93 Edition Replaces : 03.12.92 Test oil : ISO-4113

Combination no. : 0 402 648 918X

Injection pump

Pump designation: PE8P120A320LS7838-10

EP type number : 0 412 628 354

Governor

Governor design. : RQ300/1050PA993-4

: 0 421 801 602 Governer no.

Cust. part no. : 021074102

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

4- 1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 23.7...23.9

100 s: (23.4...24.2)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Dearee: -2

rpm : 1020 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 600 Speed Aneroid pressure h: 1200

: 237.0...239.0 Del.quantity

1000 : (234.0...242.0)

Spread : 6.00 cm3 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 1020 rom Rack travel in mm: 20.0

Testing:

1st rack travel in: 13.30

Speed rpm : 1090...1106

2nd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 6.5

Testing:

: 200 Speed rpm Minimum rack trave: 7.80 rpm : 300

Rack travel in mm : 6.40...6.60

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 600

Rack travel in m: 14.40...14.50

2nd speed rpm : 1050

Rack travel in m: 14.20...14.40

Aneroid/Altitude

Compensator Test

1st version

Setting

: 600 Speed magn hPa : 1200 Pressure

Rack travel mm : 14.40...14.50

Measurement

1/min: 400 Speed

1st pressure hPa : 550

Rack travel in m: 12.55...12.65

2nd pressure hPa : 250

Rack travel in m: 9.80...10.00

3rd pressure hPa : -

Rack travel in m: 8.90...10.20

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 1050 Speed

Del.quantity cm3/: 222.0...226.0 1000 s: (219.0...229.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: 550 Speed **CDM** : 400

Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0)

Aneroid pressure h: -: 500 Speed FDM

Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...134.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

Speed rpm : 1090...1106

Remarks:

Note remarks

Test sheet : MB

: 28.10.93 Edition Replaces : 18.12.92 : 1so-4113 Test oil

Combination no. : 0 402 648 921

Injection pump

Pump designation: PE8P120A320LS7839-10

EP type number : 0 412 628 855

Governor

Governor design. : RQ300/950PA993-8 Governer no. : 0 421 801 618

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 370.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm: 15.10...15.30

Del.quantity cm3/: 26.5...26.7

100 s: (26.2...27.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.0...6.6

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 550 Speed

Aneroid pressure h: 900

Del.quantity : 265.0...267.0

1000 : (262.0...270.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom .

Rack travel in mm: 20.0 Testina: 1st rack travel in: 15.50 rpm : 990...1006 Speed 2nd rack travel in: 4.00 Speed rpm : 1075...1105 4th rack travel in: 1150 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.3 Testing: Speed rpm : 200 Minimum rack trave: 7.60 rpm : 300 Speed Rack travel in mm: 6.20...6.40 Rack travel in mm : 2.00 rpm : 380...420 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 550 תוכרו hPa : 900 Pressure Rack travel mm : 15.10...15.30 Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 12.90...13.10 2nd pressure hPa : 250 Rack travel in m: 10.10...10.30 3rd pressure hPa : 1100 Rack travel in m: 15.30...15.50 * 4th pressure hPa : 1300 Rack travel in m: 15.70...15.80 * 5th pressure hPa : Rack travel in m: 9.00...9.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 2000 rpm : 950 Speed Del.quantity cm3/: 281.0...284.0 1000 s: (278.0...287.0)

cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1300 Speed rpm : 700 Del.quantity cm3/: 271.5...274.5 1000 s: (288.5...277.5) Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/: 205.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.50 Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 260.0...280.0

1000 s: (256.0...284.0)

Remarks:

: * N = 700

Note remarks

Test sheet :

Edition : 27.10.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 928

Injection pump

Pump designation: PE8P120A320LS7847-1

EP type number : 0 412 628 863

Governor

Governor design. : RQ300/1050PA1030

Governer no. : 0 421 801 640

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter × Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.8

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9) Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 Speed rpm: 1170...1200 4th rack travel in: 1350 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 5.5 Testina: Speed rpm : 200 Minimum rack trave: 7.60 Speed rpm : 300 Rack travel in mm : 5.40...5.60 Rack travel in mm: 2.00 Speed rom : 360...400 TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 13.50...13.60 2nd speed rpm : 1050 Rack travel in m: 12.80...13.00 3rd speed rpm : 950 Rack travel in m: 12.95...13.15 4th speed rpm : 775 Rack travel in m: 13.45...13.65 Aneroid/Altitude Compensator Test 1st version Settina : 400 Speed rom Pressure hPa : 1200 Rack travel mm: : 13.50...13.60 Measurement 1/min: 400 Speed 1st pressure hPa : 650 Rack travel in m: 12.90...13.00 2nd pressure hPa : 300 Rack travel in m: 11.35...11.55 3rd pressure hPa : -Rack travel in m: 10.30...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 1050 Speed rpm Del.quantity cm3/: 210.0...214.0

1000 s: (207.0...217.0)

Spread cm3 : 8.00 1000 s: (12.0) Ameroid pressure h: 650 Speed rpm : 400 Del.quantity cm3/ : 196.5...199.5 1000 s: (193.5...202.5) Ameroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 131.0...133.0 1000 s: (128.0...136.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Remarks:

H15

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 21.09.92 Edition : 08.92 Replaces : ISO-4113 Test oil Combination no. : 0 402 648 929 Injection pump Pump designation: PE8P120A320LS7847 : 0 412 628 863 EP type number Governor : RQV300...950PA1033-1 Governor design. : 0 421 813 991 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M402 LA 1st version kW : 280.0 : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0.8 Test Lines : 1 680 750 075 Outside dismeter x Wall thickness : 8.00x2.50x1000 x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.50...5.60 : (5.45...5.65) Rack travel in mm : 20.00...21.0C Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225-270-315 Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 13.50...13.60

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm: 300.0

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 300 travel mm : 1.10...1.50 2nd speed rpm : 567 travel mm : 4.40...5.00 : 780 3rd speed man. : 6.00...6.60 travel mm : 1010 4th speed rpm : 8.50...8.70 travel mm : 1190 5th speed rpm travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position Degree: -1

Speed rpm: 1080

Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Aneroid pressure h: 1200

: 233.0...235.0 Del.quantity

1000 : (230.0...238.0)

Spread

cm3 : 6.00 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 118...126

Testing:

1st rack travel in: 12.00 Speed rpm : 990...1005

2nd rack travel in: 4.00

rpm : 1080...1110 Speed

4th rack travel in: 1350

Speed rom : 0.00...1.50

LOW IDLE 1 Control lever

position degrees: 82...90

Testing:

Speed **mon** : 200 Minimum rack trave: 7.60 rpm : 300 Speed

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 300...450 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 950

Rack travel in m: 12.90...13.10

2nd speed rpm : 825

Rack travel in m: 13.20...13.40

3rd speed rpm : 700

Rack travel in m: 13.50...13.60

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm

Pressure hPa : -

: 10.50...10.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300

Rack travel in m: 11.10...11.20

2nd pressure hPa : 650

Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Spread

Aneroid pressure h: 1200

rpm : 950 Speed

Del.quantity cm3/: 214.0...218.0 1000 s: (211.0...221.0)

cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rum : 990...1005

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 250.0...290.0

1000 s: (246.0...294.0)

Rack travel in mm : 10.50...10.70

Remarks:

H17

Note remarks

Test sheet : MB

Edition : 28.10.93 Replaces : 26.02.93 : ISO-4113 Test oil

Combination no. : 0 402 648 930

Injection pump

Pump designation: PE8P120A320LS7847 EP type number : 0 412 628 853

Governor

Governor design. : RQ300/1050PA1031-2

: 0 421 801 645 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2,50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.2...5.8 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 550 Speed Aneroid pressure h: 1200

: 236.0...238.0 1000 : (233.0...241.0) Del.quantity

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 Testing: 1st version 1st rack travel in: 11.80 Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/: 210.0...214.0 rpm : 1090...1106 2nd rack travel in: 4.00 rom : 1170...1200 Speed 1000 s: (207.0...217.0) 4th rack travel in: 1350 cm3 : 8.00 Scread Speed rpm : 0.00...1.50 1000 s: (12.0) Aneroid pressure h: 650 LOW IDLE 1 rpm : 400 Del.quantity cm3/: 196.5...199.5 Setting point w/out bumper spring Speed : 300 1009 s: (193.5...202.5) rom: Rack travel in mm: 5.5 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 131.0...133.0 1000 s: (128.0...136.0) Testing: Minimum rack trave: 7.60 cm3 : 8.00Spread rpm : 300 1000 s: (12.0) Rack travel in ma : 5.40...5.60 Rack travel in mm: 2.00 Speed rpm : 370...410 **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm : 0.50 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 550 full load rack tr: 11.80 Rack travel in m: 13.50...13.60 Speed rom : 1090...1106 2nd speed rpm : 1050 Rack travel in m: 12.80...13.00 STARTING FUEL DELIVERY 3rd speed rpm : 950 Rack travel in m: 12.95...13.15 4th speed rpm : 775 : 100 rpm -Del.quantity cm3/: 250.0...290.0 1000 s: (246.0...294.0) Rack travel in m: 13.45...43.65 Aneroid/Altitude Compensator Test Remarks: 1st version Settina Speed : 400 rom hPa : 1200 Pressure : 13.50...13.60 Rack travel mm Measurement Speed $1/\min : 400$ 1st pressure hPa : 650 Rack travel in m: 12.90...13.00 2nd pressure hPa : 300 Rack travel in m: 11.35...11.55 3rd pressure hPa Rack travel in m: 10.30...10.60 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

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Note remarks

Test sheet : MB : 28.10.93 Edition Replaces : 08.92 Test oil : ISO-4113

Combination no. : 0 402 648 931

Injection pump

Pump designation: PE8P120A320LS7847 : 0 412 628 863

EP type number

Governor

Governor design. : RQ300/950PA1032-1 Governer no. : 0 421 801 646

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M402 LA Engine

: 280.0 1st version **KW** : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 : 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.2...5.8 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 550 Speed Aneroid pressure h: 1200

Del.quantity : 236.0...238.0 1000 : (233.0...241.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 MOD Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.10 rpm : 990...1006 Speed 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.5 Testing: Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 rom : 360...400 Speed CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : 0.55 Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 13.50...13.60 rpm : 950 2nd speed Rack travel in m: 13.00...13.20 3rd speed rpm : 800 Rack travel in m: 13.50...13.60 : 875 4th speed rpm Rack travel in m: 13.25...13.45 Aneroid/Altitude Compensator Test 1st version Settina : 400 Speed rpm Pressure hPa : 1200 Rack travel mm : 13.50...13.60 Measurement 1/min: 400 Speed 1st pressure hPa : 650 Rack travel in m: 12.90...13.00 2nd pressure hPa : 300 Rack travel in m: 11.35...11.55 3rd pressure hPa : -Rack travel in m: 10.45...10.75 START CUT-OUT

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 Speed rpm : 950 Del.quantity cm3/: 214.0...218.0 1000 s: (211.0...221.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 650 rpm Del.quantity cm3/: 196.5...199.5 1000 s: (193.5...202.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than

Speed rpm: 990...1006

full load rack tr: 12.10

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 45.0...65.0 1000 s: (41.0...69.0) Rack travel in mm : 10.50...10.70

Remarks:

•

Speed

Note remarks

Test sheet : MB

Edition : 28.10.93 Replaces : 27.11.92 Test oil : ISO-4113

Combination no. : 0 402 648 933

Injection pump

Pump designation : PE8P120A320LS7847 EP type number : 0 412 628 863

Governor

Governor design. : RQ300/950PA1031-3

Governer no. : 0 421 801 646

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65) Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 23.6...23.8

100 s: (23.0...23.8)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Testina: 1st version 1st rack travel in: 12.00 Aneroid pressure h: 1200 rpm : 990...1006 rpm : 950 Speed Del.quantity cm3/: 214.0...218.0 2nd rack travel in: 4.00 rpm : 1060...1090 Speed 1000 s: (211.0...221.0) 4th rack travel in: 1350 Spread cm3 : 8.00 rpm : 0.00...1.50 1000 s: (12.0) Speed Aneroid pressure h: 650 LOW IDLE 1 Speed rpm : 400 Setting point w/out bumper spring Del.quantity cm3/: 196.5...199.5 1000 s: (193.5...202.5) : 300 rpm Rack travel in nm : 5.5 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 Testina: Speed rpm : 200 1000 s: (131.0...139.0) Minimum rack trave: 7.90 cm3 : 8.00Spread rpm : 300 1000 s: (12.0) Rack travel in ma : 5.40...5.60 Rack travel in mm : 2.00 rom : 360...400 Speed **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm : 0.55 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 550 full load rack tr: 12.00 Rack travel in m: 13.50...13.60 Speed rpm : 990...1006 rpm : 950 2nd speed Rack travel in m: 13.00...13.20 STARTING FUEL DELIVERY 3rd speed rpm : 800 Rack travel in m: 13.50...13.60 4th speed rpm : 875 : 100 Speed rpm Rack travel in m: 13.25...13.45 Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Aneroid/Altitude Compensator Test Remarks: 1st version Setting : 400 Speed CDU hPa : 1200 Pressure : 13.50...13.60 Rack travel mm Measurement Speed $1/\min : 400$ 1st pressure hPa : 650 Rack travel in m: 12.90...13.00 2nd pressure hPa : 300 Rack travel in m: 11.35...11.55 3rd pressure hPa : -Rack travel in m: 10.45...10.75 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB

: 23.10.92 Edition : 07.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 934

Injection pump

Pump designation : PE8P120A320LS7823

EP type number : 0 412 628 835

Governor

: RQV350...1050PA866-Governor design.

-21

: 0 421 813 996 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 LA Engine

: 353.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 5.0...5.6 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed

rpm : 350 : 1.40...1.60 travel mm

rpm : 800 2nd speed

: 4.70...5.10 travel mm

rpm : 1100 3rd speed

: 7.60...8.20 travel mm

4th speed rpm : 1175

travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1150 Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Rack travel in m: 13.70...13.90 ★ Speed rpm : 600 4th pressure hPa : 1250 Aneroid pressure h: 900 Rack travel in m: 14.50...14.70 : 234.0...237.0 Del.quantity 5th pressure hPa : -1000 : (231.0...240.0) Rack travel in m: 10.10...10.40 : 5.00 Spread cm31000 : (9.00) START CUT-OUT RATED SPEED 1/min: 270 (290) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 115...123 1st version Testina: Aneroid pressure h: 1600 : 1050 1st rack travel in: 13.40 rpm Del.quantity cm3/: 252.0...256.0 rpm : 1090...1100 2nd rack travel in: 4.00 1000 s: (249.0...259.0) rpm : 1170...1200 cm3 : 8.00Spread 4th rack travel in: 1300 1000 s: (12.0) rpm : 0.00...1.00Aneroid pressure h: 1600 Speed Speed morn : 800 LOW IDLE 1 Del.quantity cm3/: 270.0...274.0 Control lever 1000 s: (267.0...277.0) cm3 : 8.00 position degrees: 62...70 Spread 1000 s: (12.0) Testing: Aneroid pressure h: 1600 : 1050 : 250 Speed rom Speed MC Minimum rack trave: 7.10 Del.quantity cm3/: 184.0...187.0** : 350 1000 s: (181.0...190.0) **FDM** Rack travel in mm : 5.00...5.60 cm3 : 8.00Spread 1000 s: (12.0) CONSTANT REGULATION Ameroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 149.0...151.0 rpm : 350...550 Speed TORQUE CONTROL 1000 s: (146.0...154.0) Dimension a mm : 0.50 cm3 : 8.00 Spread 2nd speed rpm : 1050 1000 s: (12.0) Rack travel in m: 14.40...14.60 3rd speed rpm : 800 Rack travel in m: 15.20...15.40 **BREAKAWAY** Aneroid/Altitude 1st version Compensator Test 1mm rack travel less than full load rack tr: 13.40 1st version rpm : 1090...1100 Speed Setting Speed : 600 STARTING FUEL DELIVERY r'om Pressure hPa : 900 Rack travel mm : 13.60...13.80 Speed : 100 rom Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Measurement 1/min: 600 Speed 1st pressure hPa : 350 Remarks: Rack travel in m: 11.10...11.30 2nd pressure hPa : 500 Rack travel in m: 12.80...13.00 ** = Set at reduced-delivery stop. 3rd pressure hPa : 1050

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB

Edition : 28.10.93 : 11.01.93 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 940

Injection pump

Pump designation : PE8P120A320LS7847 EP type number : 0 412 628 863

Governor

Governor design. : RQ300/950PA1032-4

Governer no. : 0 421 801 661

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M402 LA Engine

1st version kW : 280.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity

: 225.0...227.0 1000 : (222.0...230.0)

: 6.00 cm3

Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed r pm

Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.00 Speed rpm : 990...1006 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1350 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 חמרו Rack travel in mm: 5.5 Testina: : 200 Speed rpm Minimum rack trave: 8.00 rpm : 300 Rack travel in m. : 5.40...5.60 Rack travel in mm : 2.00 Speed rom : 360...400 TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version rpm : 550 1st speed Rack travel in m: 13.20...13.30 2nd speed rpm : 950 Rack travel in m: 13.00...13.20 rpm 3rd speed : 825 Rack travel in m: 13.20...13.30 Aneroid/Altitude Compensator Test 1st version Setting : 400 Speed rpm hPa : 1200 Pressure Rack travel mm : 13.20...13.30 Measurement Speed 1/min: 400 1st pressure hPa : 650 Rack travel in m: 12.90...13.00 2nd pressure hPa : 300 Rack travel in m: 11.35...11.55 3rd pressure hPa : -Rack travel in m: 10.45...10.75 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200

rpm : 950

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/: 45.0...75.0
1000 s: (41.0...79.0)
Rack travel in mm : 10.40...10.80

Remarks:

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Speed

Note remarks

Test sheet : MB Edition : 28.10.93 Replaces : 11.01.93

Test oil : ISO-4113

Combination no. : 0 402 648 941

Injection pump

Pump designation : PE8P120A320LS7847 EP type number : 0 412 628 863

Governor

Governor design. : RQV300...950PA1033-7

Governer no. : 0 421 814 019

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Kated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 95...115

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.50

2nd speed rpm : 567

travel mm : 4.40...5.00

3rd speed rpm : 780

travel mm : 6.00...6.60

4th speed rpm : 1010

travel mm : 8.40...8.70

5th speed rpm : 1190

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1050

Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed

rpm: : 550

Aneroid pressure h: 1200 Del.quantity

: 225.0...227.0 1000 : (222.0...230.0)

Spread

cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 117...125

Testina:

1st rack travel in: 12.00 rpm : 990...1000 Speed

2nd rack travel in: 4.00

rom : 1065...1095 Speed

4th rack travel in: 1350

rom : 0.00...1.50Speed

LOW IDLE 1 Control lever

position degrees: 82...90

Testina:

Speed : 200 COM Minimum rack trave: 9.00 : 300 וחמרו

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 300...390 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 550

Rack travel in m: 13.20...13.30

2nd speed rpm : 950

Rack travel in m: 13.00...13.20

3rd speed rpm : 825

Rack travel in m: 13.20...13.30

Aneroid/Altitude

Compensator Test

1st version Settina

Speed : 400 rpm hPa : 1200 Pressure

: 13.20...13.30 Rack travel mm

Measurement

1/min: 400 Speed

1st pressure hPa : 650

Rack travel in m: 12.90...13.00

2nd pressure hPa : 300 Rack travel in m: 11.35...11.55

3rd pressure hPa : -

Rack travel in m: 10.45...10.75

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 950 rpm

Del.quantity cm3/: 214.0...218.0

1000 s: (211.0...221.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: 650

: 400 rpm

Del.quantity cm3/: 196.5...199.5

1000 s: (193.5...202.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0) cm3 : 8.00

Spread 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rom : 990...1000

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 275.0...295.0

1000 s: (271.0...299.0)

Remarks:

J02

Note remarks

Test sheet : MB

Edition : 28.10.93 Replaces : 11.01.93 Test oil : ISO-4113

Combination no. : 0 402 648 942

Injection pump

Pump designation : PE8P120A320LS7847 EP type number : 0 412 628 863

Governor

Governor design. : RQ300/950PA1031-6

Governer no. : 0 421 801 662

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65) Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

peed rpm: 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1200

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rom : 600

Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.00 rpm : 990...1006 Speed 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1350 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.5 Testina: Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Rack travel in m. : 5.40...5.60 Rack travel in mm : 2.00 Speed rpm : 360...400 TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version 1st speed rpm : 950 Rack travel in m: 13.00...13.10 2nd speed npm : 825 Rack travel in m: 13.20...13.30 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm hPa : 1200 Pressure Rack travel mm : 13.20...13.30 Measurement 1/min: 400 Speed 1st pressure hPa : 650 Rack travel in m: 12.90...13.00 2nd pressure hPa : 300 Rack travel in m: 11.35...11.55 3rd pressure hPa : -Rack travel in m: 10.45...10.75 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200

rpm : 950

1000 s: (211.0...221.0)

Del.quantity cm3/: 214.0...218.0

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 650 Speed rpm : 400 Del.quantity cm3/ : 196.5...199.5 1000 s: (193.5...202.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 Speed rom : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0)

Remarks:

Speed

Note remarks

Test sheet : MB

Edition : 28.10.93 Replaces : 11.01.93 Test oil : ISO-4113

Combination no. : 0 402 648 945

Injection pump

Pump designation : PE8P120A320LS7847

EP type number : 0 412 628 863

Governor

Governor design. : RQ300/1050PA1030-6

Governer no. : 0 421 801 666

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M402 LA

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 683 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.8

Rack travel in mm : 5.2...5.8 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9) Spread cm3 : 0.6

oread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 550

Aneroid pressure h: 1200

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Testina: 1st rack travel in: 11.60 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 Speed rom : 0.00...1.40LOW IDLE 1 Setting point w/out bumper spring Speed : 300 man Reck travel in mm: 5.5 Testing: Speed : 200 rom Minimum rack trave: 7.30 rom : 300 Sneed Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 : 355...395 Speed COM TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 13.20...13.30 2nd speed npm : 1050 Rack travel in m: 12.80...13.00 3rd speed rpm : 950 Rack travel in m: 12.95...13.15 4th speed rpm : 800 Rack travel in m: 13.20...13.30 Aneroid/Altitude Compensator Test 1st version Setting : 400 Speed man hPa : 1200 Pressure Rack travel mm : 13.20...13.30 Measurement 1/min: 400 Speed 1st pressure hPa : 650 Rack travel in m: 12.90...13.00 2nd pressure hPa : 300 Rack travel in m: 11.35...11.55 3rd pressure hPa : -Rack travel in m: 10.30...10.60 FUEL DELIVERY CHARACTERISTICS

rpm : 1050 Speed Del.quantity cm3/: 210.0...214.0 1000 s: (207.0...217.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 650 : 400 Speed MON Del.quantity cm3/: 196.5...199.5 1000 s: (193.5...202.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 131.0...133.0 1000 s: (128.0...136.0) cm3 : 3.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 45.0...75.0 1000 s: (41.0...79.0) Rack travel in mm : 9.90...10.30

Remarks:

1st version

Aneroid pressure h: 1200

Note remarks

Test sheet : MB

: 28.10.93 Edition Peolaces : 11.01.93 : ISO-4113 Test oil

Combination no. : 0 402 648 946

Injection pump

Pump designation : PE8P120A320LS7847 EP type number : 0 412 628 863

Governor

Governor design. : RQ300/1050PA1031-7

: 0 421 801 667 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M402 LA Engine

1st version kW : 280.0 Rated speed : 210G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 388 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315 : 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm::300.0 2nd speed Rack travel in mm: 5.2...5.8

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 550 Speed Aneroid pressure h: 1200

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 Testina: 1st version 1st rack travel in: 11.70 Aneroid pressure h: 1200 rpm : 1050 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 Del.quantity cm3/: 210.0...214.0 Speed rpm : 1175...1205 1000 s: (207.0...217.0) 4th rack travel in: 1300 cm3 : 8.00Spread Speed nom : 0.00...1.401000 s: (12.0) Aneroid pressure h: 650 LOW IDLE 1 Speed rpm : 400 Del.quantity cm3/: 196.5...199.5 Setting point w/out bumper spring : 300 rpm 1000 s: (193.5...202.5) Rack travel in mm: 5.5 Ameroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 131.0...133.0 Testina: Speed 1000 s: (128.0...136.0) rpm : 200 Minimum rack trave: 7.40 Spread cm3 : 8.00 rpm : 300 1000 s: (12.0) Rack travel in m. : 5.40...5.60 Rack travel in mm: 2.00 rom : 365...405 Speed **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm : 0.30 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 550 full load rack tr: 11.70 Rack travel in m: 13.20...13.30 rpm : 1090...1106 Speed 2nd speed rpm : 1050 Rack travel in m: 12.80...13.00 STARTING FUEL DELIVERY 3rd speed rpm : 950 Rack travel in m: 12.95...13.15 4th speed rpm : 800 Speed : 100 / DM Del.quantity cm3/: 275.0...295.0 Rack travel in m: 13.00...13.10 1000 s: (271.0...299.0) Aneroid/Altitude Compensator Test Remarks: 1st version APPLICATION Setting : 400 Speed MC Omn #bus hPa : 1200 Pressure Rack travel mm : 13.20...13.30 Measurement 1/min: 400 Speed 1st pressure hPa : 650 Rack travel in m: 12.90...13.00 2nd pressure hPa : 300 Rack travel in m: 11.35...11.55 3rd pressure hPa : -Rack travel in m: 10.03...10.60 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet :

Edition : 21.10.1993 Replaces : 11.92

Test oil : ISO-4113

Combination no. : 0 402 648 947

Injection pump

Pump designation : PE8P120A320LS7859

EP type number : 0 412 528 869

Governor

Governor design. : RQ300/950PA1032-5

Governer no.

: 0 421 801 668

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0

Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

, congential . 0,00/E.30/1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 24.1...24.3

100 s: (23.8...24.6)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.9...5.5

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3: 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

eed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Ameroid pressure h: 1000

Del.quantity : 241.0...243.0

1000 : (238.0...246.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.65 Speed rpm : 990...1006

2nd rack travel in: 4.00

rpm : 1065...1095 Speed

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 5.20

Testina:

Speed : 200 COM Minimum rack trave: 8.00 Speed rpm : 300

Rack travel in mm: 5.10...5.30 Rack travel in mm: 2.00 riom : 360...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 550 Speed mon hPa : 1000 Pressure

: 13.60...13.70 Rack travel mm

Measurement

Speed 1/min: 400

1st pressure hPa : 550

Rack travel in m: 12.50...12.60

2nd pressure hPa : 250

Rack travel in m: 10.40...10.60

3rd pressure hPa : -

Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

: 950 Speed LDW

Del.quantity cm3/: 230.0...234.0 1000 s: (228.0...236.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 550

Speed rpm : 400 Del.quantity cm3/ : 203.0...206.0 1000 s: (200.0...209.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.65

rpm : 990...1006 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 65.0...95.0.0 1000 s: (61.0...99.0)

Rack travel in mm : 9.40...9.80

Remarks:

: * N = 400 1/MIN

: **N = 500 1/MIN

Note remarks

: MB Test sheet

: 28.10.93 Edition Replaces : 27,11,92 Test oil : ISO-4113

Combination no. : 0 402 648 948

Injection pump

Pump designation: PE8P120A320LS7859 EP type number : 0 412 628 869

Governor

Governor design: : RQ300/1050PA1030-7

Governer no. : 0 421 801 669

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-

Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 24.1...24.3

100 s: (23.8...24.6)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1000

Del.quantity : 241.0...246.0)

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.40 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 Speed rom : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 5.2 Testing: Speed rpm : 200 Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mra : 5.10...5.30 Rack travel in mm: 2.00 Speed : 360...400 COM TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 13.60...16.70 2nd speed rpm : 1050 Rack travel in m: 13.30...13.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 550 man hPa : 1000 Pressure Rack travel mm : 13.60...13.70 Measurement Speed 1/min: 400 1st pressure hPa : 550 Rack travel in m: 12.50...12.60 2nd pressure hPa : 250 Rack travel in m: 10.40...10.60 3rd pressure hPa : -Rack travel in m: 9.40...9.70 FUEL DELIVERY CHARACTERISTICS

cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: -: 500 Speed MOL Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

fuli load rack tr: 12.40 Speed rpm : 1090...1106

STARTING FUEL DELIVERY

:

Remarks:

Speed

1st version

Aneroid pressure h: 1000

rpm : 1050

1000 s: (219.0...229.0)

Del.quantity cm3/: 222.0...226.0

Note remarks

Test sheet

: 24.9.1993 Edition

Replaces

Test oil : ISO-4113

Combination no. : D 402 648 949

Injection pump

Pump designation: PE8P120A320LS7883

EP type number : 0 412 623 874

Governor

Governor design. : RQV300...950PA1050K

: 0 421 815 333 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

1st version kW : 370.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per walues ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15) Rack travel in mm : 14.00...15.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 8

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10 & maximum rack tra: 14.0...15.0 Difference * CS : 3.75...5.25

BASIC SETTING

1st speed rom: 950

Rack travel in mm : 14.40...14.50

Del.guantity cm3/: 26.8...27.0

100 s: (26.5...27.3)

Spread cm3 : 0.6

100 s: (0.9)

mom : 300 2nd speed

Rack travel in mm: 5.5...6.1 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 1.53...1.73

520 2nd speed rpm :

: 3.55...4.05 travel mm : 810

3rd speed rom travel mm : 5.15...5.65

: 1006 4th speed rpm

travel mm : 7.40...7.60

: 1280 5th speed man : 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position 1st version Degree: -1 Setting rpm : 1160 Speed : 850 Speed LIDIN Rack travel in mm : 12.20...14.70 Pressure hPa : 1200 Rack travel mm : 14.50...14.70 FULL LOAD DELIV. AT FULL LOAD STOP Measurement 1st version Speed 1/min: 400 Speed rpm : 950 Aneroid pressure h: 1200 1st pressure hPa : 550 Del.quantity : 268.0...270.0 Rack travel in m: 12.35...12.45 1000 : (265.0...273.0) 2nd pressure hPa : 150 : 6.00 Rack travel in m: 12.60...12.80 Spread cm3 1000 : (9.00) 3rd pressure hPa : .. Rack travel in m: 7.80...8.10 RATED SPEED START CUT-OUT 1st version Control lever 1/min : 220 (240) Speed position degrees: 109...117 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 13.40 rpm : 990...1000 Speed 1st version 2rd rack travel in: 4.00 Ameroid pressure h: 1200 : 1080...1100 Speed COM Speed rpm : 550 4th rack travel in: 1250 Del.quantity cm3/: 253.0...259.0 rom : 0.00...1.50 1000 s: (250.0...262.0) Speed Spread cm3 : 8.00 LOW IDLE 1 1000 s: (12.0) Control lever Aneroid pressure h: position degrees: 70...78 rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Testing: : 200 Speed rom: cm3 : 8.00Spread Minimum rack trave: 7.80 1000 s: (12.0) : 300 Speed rom Rack travel in mm: 5.70...5.90 **BREAKAWAY** CONSTANT REGULATION Speed rpm : 300...500 1st version 1mm rack travel less than TORQUE CONTROL Dimension a mm full load rack tr: 13.40 : ? Torque control curve - 1st version Speed rom : 990...1000 1st speed rpm : 950 Rack travel in m: 14.40...14.50 STARTING FUEL DELIVERY 2nd speed : 750 rpm Rack travel in m: 14.15...14.25 : 700 3rd speed rom Speed rpm : 100 Rack travel in m: 13,80...14.00 Del.quantity cm3/: 120.0...140.0 4th speed rpm : 650 1000 s: (116.0...144.0) Rack travel in m: 13.60...13.80 5th speed rpm : 550 Remarks: Rack travel in m: 13.40...13.60 :

Aneroid/Altitude Compensator Test

Note remarks

Test sheet : MB

Edition : 28.10.93 : 18.12.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 953

Injection pump

Pump designation : PE8P120A320LS7859 EP type number : D 412 628 869

Governor

: RQV300...950PA1033 Governor design.

-10

: 0 421 814 040 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.60...13.70

Del.quaritity cm3/: 24.1...24.3

100 s: (23.8...24.6)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.00...1.50 travel mm

2nd speed rpm : 567

travel mm : 4.40...4.90

rpm 3rd speed : 617

travel mm : 5.00...5.50

rpm : 780 4th speed

: 6.10...6.60 travel mm

5th speed : 1009 rpm

travel mm : 8.40...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1050

Speed Rack travel in mm : 11.30...13.90 FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1000

Del.quantity : 241.0...243.0

1000 : (238.0...246.0)

Spread cm3 : 6.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 12.65 Speed rpm : 990...1000 2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1 Control lever

position degrees: 82...90

Testing:

Speed rpm : 200 Minimum rack trave: 8.00 Speed rpm : 300

Rack travel in mm : 5.10...5.30

Rack travel in mm : 2.00 Speed rpm : 380...420

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 550 Pressure hPa : 1000

Rack travel mm : 13.60...13.70

Measurement

Speed 1/min: 400

1st pressure hPa : 550

Rack travel in m: 12.50...12.60

2nd pressure hPa : 250

Rack travel in m: 10.40...10.60

3rd pressure hPa : -

Rack travel in m: 9.40...9.70

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 950

Del.quantity cm3/: 230.0...234.0

1000 s: (227.0...237.0)

Spread cm3 : 8.00

1000 s: (12.0) Aneroid pressure h: 550

Speed rpm: 400

Del.quantity cm3/: 203.0...206.0

1000 s: (200.0...209.0)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0)

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.65

Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 260.0...280.0

1000 s: (256.0...284.0)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note rémarks : 5.20...5.30 Prestroke mm : (5.15...5.35) Test sheet : 29.10.93 Rack travel in mm: 20.00...21.00 Edition Replaces : 3.12.92 : 8- 7- 2- 6- 3- 5-Firing order Test oil : ISO-4113 Combination no. : 0 402 648 954 Injection pump Phasing : 0-45-90-135-180-225- Pump designation : PE8P120A320LS7859 270-315 EP type number : 0 412 628 869 Tolerance + - * : 0.50 (0.75) Governor Governor design. : RQ300/1050PA1031-8 Time to cyl. no. : 8 Governer no. : 0 421 801 674 BASIC SETTING Customer-spec. information rpm: 550 Customer : MERCEDES-BENZ 1st speed Engine : 0M442 LA Rack travel in mm: 13.60...13.70 1st version kW : 320.0 Del.quantity cm3/: 24.1...24.3 Rated speed : 2100 100 s: (23.8...24.6) TEST BENCH REQUIREMENTS Spread cm3 : 0.6Test oil inlet temp. °C : 38...42 100 s: (0.9) Overflow valve 2nd speed rpm : 300.0 : 1 417 413 025 Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.6...2.2 Inlet press., bar: 1.50 100 s: (1.3...2.5) Spread cm3 : 0.6Overflow 100 s: (1.0) quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position assembly : 1 688 901 105 Degree: -2 rpm : 600 **Opening** Rack travel in mm : 19.20...20.80 pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate diameter mm : 0,8 1st version rpm : 550 Speed Aneroid pressure h: 1000 Test lines Del.quantity : 1 680 750 075 : 241.0...243.0 1000 : (238.0...246.0) : 6.00 Spread cm3

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _____

Setting point: Speed rpm : 600

RATED SPEED

1st version

1000 : (9.00)

Rack travel in mm: 20.0 Spread cm3 : 8.001000 s: (12.0) Testina: Aneroid pressure h: 550 Speed rpm : 400 Del.quantity cm3/: 203.0...206.0 1st rack travel in: 12.40 rpm : 1090...1106 Speed 2nd rack travel in: 4.00 1000 s: (200.0...209.0) rpm : 1170...1200 Speed Aneroid pressure h: -4th rack travel in: 1300 rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) rpm : 0.00...1.50Speed LOW IDLE 1 cm3 : 8.00 Spread Setting point w/out bumper spring 1000 s: (12.0) rpm : 300 Rack travel in mm: 5.2 **BREAKAWAY** Testing: Speed rpm : 200 1st version Minimum rack trave: 7.40 1mm rack travel less than rom : 300 Rack travel in ma : 5.10...5.30 full load rack tr: 12.40 Rack travel in mm: 2.00 rpm : 1090...1106 Speed rom : 370...410 Speed STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version Speed : 100 rpm Del.quantity cm3/: 250.0...270.0 1000 s: (246.0...274.0) 1st speed rpm : 550 Rack travel in m: 13.60...16.70 2nd speed rpm : 1050 Rack travel in m: 13.30...13.50 Remarks: Aneroid/Altitude Compensator Test 1st version Setting : 550 Speed **Lbu** Pressure hPa : 1000 Rack travel mm : 13.60...13.70 Measurement 1/min: 400 Speed 1st pressure hPa : 550 Rack travel in m: 12.50...12.60 2nd pressure hPa : 250 Rack travel in m: 10.40...10.60 3rd pressure hPa : -Rack travel in m: 9.40...9.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 1050 Speed Del.quantity cm3/: 222.0...226.0 1000 s: (219.0...229.0)

Note remarks

Test sheet

: 29.10.93 Edition Replaces : 18.12.92 Test oil : ISO-4113

Combination no. : 0 402 648 955

Injection pump

Pump designation : PE8P120A320LS7859 EP type number : 0 412 628 869

Governor

Governor design. : RQ300/950PA1031-9

Governer no. : 0 421 801 675

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke nim

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8- 7- 2- 6- 3- 5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 24.1...24.3

100 s: (23.8...24.6)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 4.9...5.5

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 Speed rpm : 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1000

: 241.0...243.0 Del.quantity

1000 : (238.0...246.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed L.DUI : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.65 Speed rpm : 990...1006 2nd rack travel in: 4.00 Speed rpm : 1065...1095 4th rack travel in: 1200 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.2 Testina: Speed rpm : 200 Minimum rack trave: 7.50 rpm : 300 Rack travel in mm : 5.10...5.30 Rack travel in mm: 2.00 Speed rpm : 360...400 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm Pressure hPa : 1000 Rack travel mm : 13.60...13.70 Measurement Speed 1/min: 400 ist pressure hPa : 550 Rack travel in m: 12.50...12.60 2nd pressure hPa : 250 Rack travel in m: 10.40...10.60 3rd pressure hPa : -Rack travel in m: 9.40...9.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 950 Speed Del.quantity cm3/: 230.0...234.0 1000 s: (227.0...237.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 550 rpm : 400 Speed Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00Spread

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.65 Speed rpm : 990...1006

STARTING FUEL DELIVERY

:

Remarks:

J20

Note remarks

Test sheet : MB : 29,10,93 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 956

Injection pump

Pump designation: PE8P120A320LS7863 EP type number : 0 412 628 874

Governor

: RQV300...1050PA1050-Governor design.

1K

: 0 421 815 339 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 370.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Cverflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15) Rack travel in mm : 14.00...15.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 8

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 25.7...25.9

100 s: (25.4...26.2)

Spread cm3 : 0.6

100 s: (0.9)

rpm:: 300.0 2nd speed

Rack travel in mm : 5.50...6.10 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

: 1.75...1.95 travel mm

2nd speed : 347 **Lbw**

: 2.47...2.97 travel mm

: 397 3rd speed rpm

: 3.01...3.51 travel mm

rpm : 850 4th speed

: 5.35...5.85 travel mm

: 1106 5th speed rpm

: 8.86...9.06 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1180 Speed

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP Measurement 1st version $1/\min : 400$ Speed Speed rpm : 1050 Aneroid pressure h: 1200 1st pressure hPa : 550 : 257.0...259.0 Del.quantity Rack travel in m: 12.35...12.45 1000 : (254.0...262.0) 2nd pressure hPa : 150 Rack travel in m: 8.80...9.00 : 6.00 cm3 Spread 1000 : (9.00) 3rd pressure hPa : -Rack travel in m: 7.80...8.10 RATED SPEED START CUT-OUT 1st version Control Lever Speed 1/min : 220 (240) position degrees: 115...123 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 13.00 rpm : 1090...1100 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 1200 Speed rpm : 1155...1185 Speed rpm : 750 4th rack travel in: 1300 Del.quantity cm3/: 260.0...264.0 rom : 0.00...1.50 1000 s: (257.0...267.0) Speed Spread cm3 : 8.00LOW IDLE 1 1000 s: (12.0) Control Lever Aneroid pressure h: 1200 position degrees: 71...79 Speed : 550 **FDM** Del.quantity cm3/: 253.0...259.0 Testing: 1000 s: (250.0...262.0) Speed : 200 cm3 : 8.00rpm Spread Minimum rack trave: 7.70 1000 s: (12.0) : 300 Aneroid pressure h: 550 rpm Rack travel in mm : 5.70...5.90 rpm : 400 Speed Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) CONSTANT REGULATION rpm : 310...490 Speed Aneroid pressure h: -: 500 Speed L.D.W. TORQUE CONTROL Del.quantity cm3/: 132.0...134.0 Dimension a mm :? 1000 s: (129.0...137.0) cm3 : 8.00 Torque control curve - 1st version Spread 1st speed rpm : 1050 1000 s: (12.0) Rack travel in m: 14.00...14.10 : 950 2nd speed rpm Rack travel in m: 14.35...14.55 **BREAKAWAY** 3rd speed rpm : 750 Rack travel in m: 14.15...14.25 1st version 4th speed rpm : 650 1mm rack travel less than Rack travel in m: 13.60...13.80 5th speed rpm : 550 full load rack tr: 13.00 Rack travel in m: 13.35...13.65 Speed : 1090...1100 COM Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test : 100 Speed rpm 1st version Del.quantity cm3/: 120.0...140.0 1000 s: (116.0...144.0) Settina : 850 Speed man Rack travel in mm : 11.20...12.00 hPa : 1200 Pressure Rack travel mm : 14.60...14.80 Remarks:

Note remarks

Test sheet : MB

Edition : 29,10,93

Replaces Test oil

: ISO-4113

Combination no. : 0 402 648 957

Injection pump

Pump designation : PE8P120A320LS7863 EP type number : 0 412 628 874

Governor

: RQV300...950PA1056K Governor design.

: 0 421 815 340 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

1st version kW : 370.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 14.00...15.00

Firing order

: 8- 7- 2- 6- 3- 5-

Phasing : G-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 26.8...27.0

100 s: (26.5...27.3)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 5.50...6.10

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.53...1.73 travel mm

rpm : 361 2nd speed

: 2.56...3.06 travel mm

rpm : 411 3rd speed travel mm : 3.16...3.66

rpm : 810 4th speed

: 5.14...5.64 travel mm

: 1006 5th speed rpm

: 7.40...7.60 travel ma

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1180 Speed

Rack travel in mm : 12.30...14.70

FULL LOAD DELIV. AT FULL LOAD STOP

Measurement 1st version 1/min : 400Speed Speed rpm : 950 Aneroid pressure h: 1200 1st pressure hPa : 550 Rack travel in m: 12.35...12.45 Del.quantity : 268.0...270.0 1000 : (265.0...273.0) 2nd pressure hPa : 150 : 6.00 Rack travel in m: 8.80...9.00 cm3 Spread 1000 : (9.00) 3rd pressure hPa : -Rack travel in m: 7.80...8.10 RATED SPEED START CUT-OUT 1st version Control lever Speed 1/min : 220 (240) position degrees: 107...115 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 13.40 rpm : 990...1000 Speed 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 1200 rpm : 1090...1120 Speed Speed rpm : 750 4th rack travel in: 1250 Del.quantity cm3/: 260.0...264.0 1000 s: (257.0...267.0) Speed npm : 0.00...1.50cm3 : 8.00 Spread LOW IDLE 1 1000 s: (12.0) Aneroid pressure h: 1200 Control lever position degrees: 70...78 Speed rpm : 550 Del.quantity cm3/ : 253.0...259.0 Testing: 1000 s: (250.0...262.6) Speed rpm : 200 Spread cm3 : 8.00 Minimum rack trave: 7.80 1000 s: (12.0) rpm : 300 Speed Aneroid pressure h: 550 Rack travel in mm : 5.70...5.90 Speed : 400 rpm Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) CONSTANT REGULATION Speed rpm : 300...500 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version Spread cm3 : 8.001st speed rpm : 950 1000 s: (12.0) Rack travel in m: 14.40...14.50 2nd speed rpm : 850 Rack travel in m: 14.50...14.70 BREAKAWAY 3rd speed rpm : 750 Rack travel in m: 14.15...14.25 1st version rpm : 650 4th speed 1mm rack travel less than Rack travel in m: 13.60...13.80 5th speed rpm : 550 Rack travel in m: 13.40...13.60 full load rack tr: 13.40 Speed rpm : 990...1000 Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/ : 120.0...140.0 1000 s: (116.0...144.0) 1st version Settina Rack travel in mm : 11.20...12.00 Speed : 850 man hPa : 1200 Pressure Rack travel mm : 14.60...14.80 Remarks:

Note remarks

Test sheet : MB

: 29.10.93 Edition

Replaces

: ISO-4113

Test oil

Combination no. : 0 402 648 958

Injection ource

Pump designation : PE8P120A320LS7863

EP type number

: 0 412 628 874

Governor

: RQV300...1050PA1056-Governor design.

1K

: 0 421 815 339 Governer no.

Customer—spec, information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 370.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 14.00...15.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 8

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 25.7...25.9

100 s: (25.4...26.2)

Spread cm3 : 0.6

100 s: (0.9)

Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rom : 300 1st speed

: 1.75...1.95 travel mm

2nd speed rpm : 347

: 2.47...2.97 travel mm

: 397 3rd speed rpm

travel mm : 3.01...3.51

4th speed : 850 rpm

: 5.35...5.85 travel mm

rpm : 1106 5th speed

: 8.86...9.06 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1180

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP Measurement 1st version Speed $1/\min : 400$ Speed nom : 1050 Aneroid pressure h: 1200 1st pressure hPa : 550 Rack travel in m: 12.35...12.45 2nd pressure hPa : 150 : 257.0...259.0 Del.quantity 1000 : (254.0...262.0) Rack travel in m: 8.80...9.00 Spread cm3: 6.00 1000 : (9.00) 3rd pressure hPa :-Rack travel in m: 7.80...8.10 RATED SPEED START CUT-OUT 1st version Control lever Speed 1/min: 220 (240) position degrees: 115...123 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 13.00 rpm : 1090...1100 Speed 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 1200 rpm : 1155...1185 : 750 Speed Speed **LDU** 4th rack travel in: 1300 Del.quantity cm3/: 260.0...264.0 1000 s: (257.0...267.0) Speed rom : 0.00...1.50Spread cm3 : 8.00 1000 s: (12.0) LOW IDLE 1 Control lever Aneroid pressure h: 1200 : 550 position degrees: 71...79 CDU Del.quantity cm3/: 253.0...259.0 1000 s: (250.0...262.0) Testing: Speed **rpm** : 200 Spread cm3 : 8.00Minimum rack trave: 7.70 1000 s: (12.0) Aneroid pressure h: 550 Speed **MCL** : 300 Rack travel in mm : 5.70...5.90 Speed rpm : 400 Del.quaritity cm3/: 203.0...206.0 1000 s: (200.0...209.0) CONSTANT REGULATION Speed rom : 300...500Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version cm3 : 8.00 Spread 1st speed rpm : 1050 1000 s: (12.0) Rack travel in m: 14.00...14.10 rpm : 950 2nd speed Rack travel in m: 14.35...14.55 **BREAKAWAY** rpm : 750 3rd speed Rack travel in m: 14.15...14.25 1st version 4th speed rpm : 650 1mm rack travel less than Rack travel in m: 13.60...13.80 5th speed rpm : 550 full load rack tr: 13.00 Rack travel in m: 13.40...13.60 rpm : 1090...1100 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test rpm : 100 Del.quantity cm3/: 120.0...140.0 1000 g: (116.0...144.0) 1st version Setting Rack travel in mm : 11.20...12.00 Speed תכח : 850 hPa : 1200 Pressure Rack travel mm : 14.60...14.80 Remarks:

Note remarks

Test sheet : MB

: 30.04.92 Edition

Replaces

: ISO-4113 Test cil

Combination no. : 0 402 649 801

Injection pump

Pump designation : PE10P120A320LS7809

-11

EP type number

: 0 412 629 807

Governor

Governor design. : RQ300/1050PA717-1

Governer no. : 0 421 801 396

Customer-spec. information

Customer : DAIMLER-BENZ

: OM443 LA Engine

: 401.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 1 688 901 019 assembly

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 20.00...21.00 Firing order : 10- 9- 4- 1- 8- 7-

6-3-5-2

: 0-45-72-117-144-189-Phasing

216-261-283-333

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 21.9...22.1

100 s: (21.6...22.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 219.0...221.0 1000 : (216.0...224.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0 Testing: 1st rack travel in: 14.20 rom : 1095...1110 Speed 2nd rack travel in: 4.00 Speed rpm : 1150...1189 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rom Rack travel in mm: 6.7 Testing: : 100 Speed rpm Minimum rack trave: 8.30 rpm : 300 Speed Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm 2nd speed rpm : 1050 Rack travel in m: 15.20...15.40 : 800 3rd speed rpm Rack travel in m: 15.50...15.70 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm Pressure hPa : 900 : 14.70...14.90 Rack travel mm Measurement Speed 1/min : 6001st pressure hPa : 400 Rack travel in m: 12.10...12.30 2nd pressure hPa : 600 Rack travel in m: 13.60...13.80 3rd pressure hPa : 960 Rack travel in m: 14.80...14.90 * 4th pressure hPa : 1100 Rack travel in m: 15.20...15.40 5th pressure hPa Rack travel in m: 11.20...11.40 START CUT-OUT 1/min: 220 (240) Speed

1st version Aneroid pressure h: 1300 : 1050 Speed rpin Del.quantity cm3/: 229.0...232.0 1000 s: (226.0...235.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1300 : 800 Speed rpm Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 133.0...135.0 1000 s: (130.0...138.0) cm3 : 8.00 Spread 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.20

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 230.0...250.0 1000 s: (226.0...254.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet

Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 649 803

Injection pump

Pump designation: PE10P120A320LS7809

-11

EP type number : 0 412 629 807

Governor

Governor design. : RQV300...1050PA797-4

Governer no. : 0 421 813 654

Customer-spec. information

Customer : DAIMLER-BENZ

: OM443 LA Engine

1st version kW : 401.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 20.00...21.00

: 10-9-4-1-3-7-Firing order

6-3-5-2

: 0-45-72-117-144-189-Phasing

216-261-288-333

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 21.9...22.1

100 s: (21.6...22.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 6.6...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 600

: 4.90...5.10 travel mm

3rd speed : 800 rpm

: 5.80...6.10 travel mm

rpm : 1075 4th speed

: 7.40...7.70 travel mm

: 1150 5th speed **LDW**

: 8.00...8.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

Rack travel in m: 13.60...13.80 FULL LOAD DELIV. AT FULL LOAD STOP 3rd pressure hPa : 960 Rack travel in m: 14.80...14.90 * 1st version Speed rpm : 600 4th pressure hPa : 1100 Aneroid pressure h: 900 Rack travel in m: 15.20...15.40 Del.quantity : 219.0...221.0 Sth pressure hPa : -1000 : (216.0...224.0) Rack travel in m: 11.20...11.40 Spread : 5.00 cm3 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 124...116 1st version Testing: Aneroid pressure h: 1300 1st rack travel in: 14.10 rpm : 1050 Del.quantity cm3/: 229.0...232.0 1000 s: (226.0...235.0) rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1155...1185 cm3 : 8.00Speed Spread 4th rack travel in: 1300 1000 s: (12.0) rpm : 0.00...1.00 Speed Aneroid pressure h: 1300 : 800 Speed COM Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) LOW IDLE 1 Control lever position degrees: 81...89 cm3 : 8.00 Spread 1000 s: (12.0) Testing: Aneroid pressure h: -Speed : 200 Speed rom : 500 man Del.quantity cm3/: 133.0...135.0 Minimum rack trave: 8.60 1000 s: (130.0...138.0) rpm : 300 Rack travel in mm : 6.60...6.80 cm3 : 8.00 Spread 1000 s: (-) CONSTANT REGULATION rpm : 300...400 Speed **BREAKAWAY** TORQUE CONTROL Dimension a mm : 0.40 1st version 2nd speed rpm : 1050 Rack travel in m: 15.10...15.30 1mm rack travel less than : 800 full load rack tr: 14.10 3rd speed rpm Rack travel in m: 15.50...15.70 rpm : 1090...1100 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed : 100 rpm 1st version Del.quantity cm3/: 230.0...250.0 Settina 1000 s: (226.0...254.0) Speed : 600 rpm Pressure hPa : 900 Remarks: : 14.70...14.90 Rack travel mm Measurement * Increase in control-rod travel with Speed $1/\min : 600$ respect to setting at least 0.1 mm 1st pressure hPa : 400 Rack travel in m: 12.10...12.30

2nd pressure hPa : 600

Note remarks

Test sheet

: 30.04.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 649 804

Injection pump

Pump designation : PE10P120A320LS7809

-11

EP type number : 0 412 629 807

Governor

Governor design. : RQV300...1050PA797-6

Governer no. : 0 421 813 705

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM443 A

1st version kW : 331.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 20.00...21.00

: 10- 9- 6- 1- 8- 7-6- 3- 5- 2 Firing order

Phasing : 0-45-72-117-144-189-

216-261-288-353

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 10

EASTC SETTING

1st speed rpm : 1050

Rack travel in mm: 13.30...13.40

Del.quantity cm3/: 18.7...19.0

100 s: (18.4...19.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.5...6.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.20...1.40 travel mm

2nd speed : 600 rpm

: 4.90...5.20 travel mm

: 800 3rd speed rpm

: 5.80...6.20 travel mm

: 1025 4th speed rpm

travel mm : 8.50...9.00

: 1175 5th speed COM

travel mm : 9.50...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed

rpm : 1050 Aneroid pressure h: 900

: 187.0...190.0 Del.quantity

1000 : (184.0...193.0) cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 12.30

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1150...1180 4th rack travel in: 1300

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 83...91

Testing:

Speed : 200 **MCL** Minimum rack trave: 8.60 rpm : 300

Rack travel in mm : 6.50...6.80

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : 0.90

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13.30...13.40

2nd speed rpm : 750

Rack travel in m: 14.20...14.40

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 rpm Pressure hPa

Rack travel : 11.50...11.80 mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300

Rack travel in m: 12.10...12.30

2nd pressure hPa : 550

Rack travel in m: 13.50...13.70

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 600 Speed rpm

Del.quantity cm3/: 198.0...202.0 1000 s: (195.0...205.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/: 131.0...133.0
1000 s: (128.0...136.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.30

rpm : 10/90...1100 Speed

STARTING FUEL DELIVERY

Speed : 100 **FDM**

Del.quantity cm3/: 220.0...240.0

1000 s: (216.0...244.0)

Remarks:

•

Note remarks

Test sheet : MB

Edition : 30.04.92

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 649 805

Injection pump

Pump designation : PE10P120A320LS7817

-10

EP type number : 0 412 629 808

Governor

Governor design. : RQ300/1250PA856-1

Governer no. : 0 421 801 449

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M443 LA

1st version kW : 400.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

× Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 20.00...21.00 Firing order : 10-9-4-1-8-7-

6-3-5-2

Phasing : 0-45-72-117-144-189-

216-261-288-333 : 0.50 (0.75)

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.50...15.70

Del.quantity cm3/: 22.4...22.6

100 s: (22.1...22.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.6...6.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

ntrol-lever position | Degree: -2

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1050

Del.quantity : 224.0...226.0

1000 : (221.0...229.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0 Testing: 1st rack travel in: 14.40 rom : 1295...1310 2nd rack travel in: 4.00 rpm : 1390...1420 Speed 4th rack travel in: 1500 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring **CDM** Rack travel in mm: 6.7 Testing: : 200 Speed Libu Minimum rack trave: 8.10 rpm : 300 Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 : 390...420 Speed COOM TORQUE CONTROL Dimension a mm 2nd speed rpm : 1250 Rack travel in m: 15.40...15.60 3rd speed rpm : 800 Rack travel in m: 16.10...16.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed **CDM** hPa : 1050 Pressure Rack travel mm : 16.10...16.30 Measurement Speed $1/\min : 600$ 1st pressure hPa : 400 Rack travel in m: 13.20...13.40 2nd pressure hPa : 750 Rack travel in m: 15.20...15.40 3rd pressure hPa : 1250 Rack travel in m: 16.20...16.40 * 4th pressure hPa : 1500 Rack travel in m: 16.60...16.80 5th pressure hPa : -Rack travel in m: 11.50...11.80 START CUT-OUT

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1500 : 1250 mom Del.quantity cm3/: 222.0...226.0 1000 s: (219.0...229.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1500 : 800 Speed MCC Del.quantity cm3/: 235.0...239.0 1000 s: (232.0...242.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 129.0...131.0 1000 s: (126.0...134.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.40 Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 230.0...250.0 1000 s: (226.0...254.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Note remarks

Test sheet : MB

Edition : 30.04.92

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 649 808

Injection pump

Pump designation : PE10P120A320LS7809

-11

EP type number : 0 412 629 807

Governor

Governor design: : RQ300/1050PA762-6

: 0 421 801 471 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M443 A

: 331.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 20.00...21.00

: 10-9-4-1-8-7-Firing order

6-3-5-2

: 0-45-72-117-144-189-216-261-288-333 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rom : 1050

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.4...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050Aneroid pressure h: 900

: 185.0...187.0 Del.quantity 1000 : (182.0...190.0)

Spread : 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.30 rpm : 1095...1110 2nd rack travel in: 4.00 rpm : 1165...1195 Speed

4th rack travel in: 1250 rom : 0.00...1.50Speed

Setting point w/out bumper spring rpm : 300 Rack travel in mm: 7.1

LOW IDLE 1

Testing: Speed : 200 MUN Minimum rack trave: 9.20 nom : 300 Rack travel in mm : 6.80...7.40

Rack travel in mm: 2.00 rom : 395...435 Speed

TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.30...13.40 2nd speed rpm : 750 Rack travel in m: 14.70...15.00

Aneroid/Altitude Compensation Test

1st version Setting Speed

: 500 וחכון Pressure hPa : -

: 11.30...11.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300

Rack travel in m: 11.90...12.10

2nd pressure hPa : 550

Rack travel in m: 13.40...13.60

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900

nom : 750 Speed

Del.quantity cm3/: 202.0...205.0

1000 s: (199.0...208.0)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 129.0...131.0 1000 s: (126.0...134.0)

cm3 : 8.00 Spread 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.30 rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

Note remarks

Test sheet : MB 14,7 g11 : 31.07.92 Edition : 05.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 678 815

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RSV650...1200P0A826

-1

Governer no. : 0 421 833 357

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442A

1st version kW : 245.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1180

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm: 4.0...4.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1180 Speed

: 170.0...172.0 Del.quantity

1000 : (167.0...175.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 92...100 Testing: 1st rack travel in: 11.20 Speed rpm : 1215...1225 2nd rack travel in: 4.00 Speed rpm : 1249...1267 4th rack travel in: 1500 Speed rpm : 0.30...1.40 LOW TOLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring rpm : 650 Speed Rack travel in mm: 4.3 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 650 Speed Rack travel in mm: 4.00...4.60 Rack travel in mm: 2.00 Speed rpm : 660...720 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1180 Rack travel in m: 12.20...12.30 2nd speed rpm : 1000 Rack travel in m: 12.40...12.60 3rd speed rpm : 900 Rack travel in m: 12.80...13.00 4th speed rpm : 600 Rack travel in m: 13.50...13.70 FUEL DELIVERY CHARACTERISTICS 1st version : 900 Speed rpm Del.quantity cm3/: 184.0...187.0 1000 s: (181.0...190.0) cm3 : 8.00Spread 1000 s: (12.0) : 600 Speed וחכרו Del.quantity cm3/: 195.0...199.0 1000 s: (192.0...202.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1215...1225

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 170.0...190.0 1000 s: (166.0...194.0)

:

Remarks:

Note remarks

Test sheet

: CUM

Edition

: 23,10,91

Recitaces

Test oil

: ISO-4113

Combination no. : 0 402 736 803

Injection pump

Pump designation : PES6P110A120RS7187

EP type number

: 0 412 716 801

Governor

Governor design.

: RQV350...1100PA924

-3K

Governer no.

: 0 421 815 228

Customer-spec. information Customer

: CDC

Engine

: 6CTA

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 33...42

Overflow valve

: 2 417 413 047

Overf'Low

quantity min. 1/h: 160...170

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test Lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mn

: 4.35...4.45

Rack travel in mm : 9.00...12.00

: (4.30...4.50)

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rom: 1100

Rack travel in mm: 10.40...10.50

Del.quantity cm3/: 13.7...13.9

100 s: (13.4...14.2)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 350.0

Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 3.0...3.6

Spread

100 s: (2.8...3.8) cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350

travel mm

: 1.10...1.50

2nd speed

rpm : 550

travel mm 3rd speed

: 3.70...4.30

travel mm

mom : 900 : 6.90...7.50

4th speed

rpm : 1150

travel mm

travel mm

: 9.70...9.90

5th speed

nom : 1250

: 11.00...11.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1230

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

Aneroid pressure h: 900

Del.quantity : 137.0...139.0 1000 : (134.0...142.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 9.40

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1200...1230 4th rack travel in: 1350

nom : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 11...19 Speed rpm : 350

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 350...450

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.40...10.50

2rid speed nom : 900

Rack travel in m: 10.10...10.30

3rd speed rpm : 650

Rack travel in m: 0.00...9.90

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 1100 mqn Pressure hPa : 900

Rack travel mm : 10.40...10.50

Measurement

1/min: 1100 Speed

1st pressure hPa : -

Rack travel in m: 6.70...7.10

2nd pressure hPa : 200 Rack travel in m: 7.40...7.50

3rd pressure hPa : 330

Rack travel in m: 8.40...8.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 86.0...90.0

1000 s: (84.0...92.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1140...1150 Speed

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 30.0...36.0 1000 s: (28.0...38.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

Test sheet : CUM 8,3 r
Edition : 02.07.93
Replaces : 06.93
Test oil : ISO-4113

Combination no. : 0 402 736 807

Injection pump

Pump designation : PES6P110A120RS7214 EP type number : 0 412 716 805

Governor

Governor design. : RQV350...1100PA964

-1K

Governer no. : 0 421 815 253

Customer—spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _____ BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45

: (4.30...4.50)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 15.80...15.90

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 2.7...3.3

100 s: (2.5...3.5) Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00 2nd speed rpm : 450

travel mm : 3.10...3.50 3rd speed rpm : 600

travel mm : 5.10...5.50

4th speed rpm : 1000

travel mm : 8.10...8.30

5th speed rpm : 1200

travel mm : 9.60...10.00

GUIDE SLEEVE POSITION Control-lever position

ver position
Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1500

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 64...72

Testing:

1st rack travel in: 14.50

: 1145...1155 Speed **MCL**

2nd rack travel in: 4.00

rpm : 1300...1330 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed rpm Minimum rack trave: 7.20 rpm : 350

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rom : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 15.80...15.90

: 650 2nd speed nom

Rack travel in m: 13.20...13.60

3rd speed rpm : 1100

Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Setting

: 1050 Speed rom Pressure hPa : 1500

: 15.80...15.90 Rack travel mm

Measurement

1/min: 1050 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 335

Rack travel in m: 10.10...10.20

3rd pressure hPa : 845

Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min: 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed : 650 **CDM**

Del.quantity cm3/: 190.5...196.5 1000 s: (187.5...199.5)

Spread cm3 : 8.00 1000 s: (12.0)

Anteroid pressure h: -

: 500 Speed (non Del.quantity cm3/: 91.0...95.0

1000 s: (89.0...97.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.50

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 11.00...12.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: C.D.C. # 3921771

Start-of-delivery mark = 5.5° after start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

: CUM 8,3 r 1 : 02.07.93 Test sheet Edition Replaces : 06.93 : ISO-4113 Test oil

Combination no. : 0 402 736 814

Injection pump

Pump designation : PES6P110A120RS7214 : 0 412 716 805

EP type number Governor

: RQV350...1200PA964 Governor design.

-6K

: 0 421 815 258 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm

: (4.30...4.50) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing arder

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

rpm : 1200 1st speed

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 2.7...3.3 100 s: (2.5...3.5)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 1.80...2.00 rpm : 450 2nd speed

travel mm

: 3.10...3.50 rpm : 700

3rd speed

: 5.90...6.30 travel mm

: 1200 4th speed rpm : 9.00...9.20 travel mm

1400 5th speed rom

: 10.70...11.10 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 1200

Del.quantity : 183.0...188.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 62...70

Testina:

1st rack travel in: 13.50

rpm : 1245...1255 Speed

2nd rack travel in: 4.00

rpm : 1405...1435 Speed

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed : 275 **FDM** Minimum rack trave: 7.20 rpm : 350

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rom : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 14.50...14.60

2nd speed rpm : 650

Rack travel in m: 11.40...11.80

Aneroid/Altitude Compensator Test

1st version Settina

: 1200 Speed man hPa : 1200 Pressure

: 14.50...14.60 Rack travel mm

Measurement

1/min: 1200 Speed

1st pressure hPa : -

Rack travel in m: 7.50...7.90

2nd pressure hPa : 320 Rack travel in m: 9.60...9.70

3rd pressure hPa : 860

Rack travel in m: 13.30...13.70

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 650

Del.quantity cm3/: 165.5...171.5 1000 s: (162.5...174.5)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: -Speed : 500 MON

Del.quantity cm3/: 86.5...90.5 1000 s: (84.5...92.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.50

rpm : 1245...1255 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm

Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: C.D.C. # 3921775

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

Test sheet : CUM 8,3 r 2
Edition : 15.08.93
Replaces : 12.92
Test oil : ISO-4113

Combination no. : 0 402 736 816

Injection pump

Pump designation : PES6P110A120RS7214 EP type number : 0 412 716 805

Governor

Governor design. : RQV350...1200PA964

-8K

Governer no. : 0 421 815 264

Customer—spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 213.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _____ BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45

: (4.30...4.50)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 19.1...19.3

100 s: (18.8...19.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.3 Del.quantity cm3/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

travel mm : 1.80...2.00

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 700

travel mm : 5.90...6.30 4th speed rpm : 1200

travel mm : 9.00...9.20

5th speed rpm : 1400

travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

Del.quantity : 191.5...193.5

1000 : (188.5...196.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 62...70

Testina:

1st rack travel in: 13.20

rpm : 1245...1255 Speed

2nd rack travel in: 4.00

: 1400...1430 Speed rpm

4th rack travel in: 1500

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

: 275 Speed rpm Minimum rack trave: 7.20 rpm : 350 Speed

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 14.70...14.80

: 650 2nd speed rpm

Rack travel in m: 12.60...13.00

: 1200 3rd speed rom

Rack travel in m: 14.20...14.40

Aneroid/Altitude

Compensator Test

1st version Setting

Speed : 1100 rpm Pressure hPa : 1200

: 14.70...14.80 Rack travel mm

Measurement

1/min: 1100 Speed

1st pressure hPa : -

Rack travel in m: 7.80...8.20

2nd pressure hPa : 335

Rack travel in m: 9.60...9.70

3rd pressure hPa : 785

Rack travel in m: 12.80...13.20

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed MOM : 650

Del.quantity cm3/: 181.0...187.0 1000 s: (178.0...190.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 90.0...94.0

1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20

Speed rpm : 1245...1255

STARTING FUEL DELIVERY

: 100 Speed COM

Del.quantity cm3/: 135.0...175.0 1000 s: (130.0...180.0)

Rack travel in mm: 10.70...11.70

LOW IDLE

Speed CDM -

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: C.D.C. # 3916626

Start-of-delivery mark 6° cam angle

after start of delivery cyl. 1

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

Test sheet : CUM Edition : 22.01.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 736 830

Injection pump

Pump designation : PES6P110A120RS7263

EP type number : 0 412 716 808

Governor

Governor design. : RQV350..1250PA964

-11K

Governer no. : 0 421 815 321

Customer-spec. information Customer : CUMMINS

Engine : 6BTAA

: 154.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm # 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.35...4.45

: (4.30...4.50)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 15.1...15.3

100 s: (14.8...15.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 4.9...5.2 Del.quantity cm3/ : 2.3...2.9

100 s: (2.1...3.1)

Spread cm3 : 0.7100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1295

: 7.90...8.10 travel mm

rpm : 350 2nd speed

travel mm : 1.60...1.80

3rd speed rpm : 450

: 2.40...3.00 travel mm

rpm : 900 4th speed

: 4.60...5.20 travel mm

: 1600 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1440 Speed

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200 Del.quantity : 757.0...153.0

1000 : (148.0...156.0)

cm3 : 5.00Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 13.50

rpm : 1305...1315 Speed

2nd rack travel in: 4.00

rpm : 1435...1465 Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

Speed rpm : 250 Minimum rack trave: 6.50 rpm

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 310...440 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rom: 1100

Rack travel in m: 13.80...13.90

2nd speed rpm : 750

Rack travel in m: 12.30...12.50 3rd speed rpm : 1250 Rack travel in m: 14.40...14.60

4th speed rpm : 400

Rack travel in m: 11.30...11.60

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 1250 rom hPa : 1200 Pressure

: 14.40 ... 14.60 Rack travel mm

Measurement

1/min: 1250 Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.90

2nd pressure hPa : 775

Rack travel in m: 13.10...13.20

3rd pressure hPa : 570

Rack travel in m: 11.10...11.50

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

ist version

Aneroid pressure h: 1200 rpm : 750

Del.quantity cm3/: 151.0...157.0

1000 s: (148.0...160.0)

Spread cm3 : 3.00

1000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 123.0...125.0

1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

rpm : 1305...1315 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 135.0...175.0 1000 s: (131.0...179.0)

Rack travel in mm: 12.00...13.00

LOW IDLE

: 350 Speed rpm

Rack travel in mm : 4.90...5.10

Remarks:

: C.D.C. # 3281780 Start-of-delivery blocking 6,5° after start of delivery of cylinder no. 1.

K23

Note remarks

: CUM Test sheet : 16.08.93 Edition : 04.93 Replaces Test oil : ISO-4113

Combination no. : 0 402 736 835

Injection pump

Pump designation : PES6P120A120RS7265 EP type number : 0 412 726 882

Governor

: RQV350...900PA964-13 Governor design.

: 0 421 815 324 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CTA-A

: 205.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 086

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 90...110

Test nozzle holder

: 1 688 901 103 assembly

Opening

pressure, bar : 207...210

Orifice plate

: 0,7 diameter mm

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x3.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05 : (3.90...4.10)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed

Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 2.0...2.6

100 s: (1.8...2.8)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.60...1.80 travel mm

2nd speed rpm : 450

: 3.00...3.40 travel mm

3rd speed rpm : 600

: 5.20...5.60 travel mm

rpm : 1000 4th speed

travel mm : 8.40...8.60

rpm : 1150 5th speed

travel mm : 9.80...10.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed Aneroid pressure h: 1200

Del.quantity : 240.3...245.5)

cm3 : 5.00Rack travel in m: 13.10...13.50 Spread 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 290 (300) 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 60...68 Testing: 1st version 1st rack travel in: 13.00 Aneroid pressure h: 1200 Speed rpm : 1045...1075 Speed MCC : 650 Del.quantity cm3/: 218.0...224.0 1000 s: (215.0...227.0) 2nd rack travel in: 4.00 rpm : 1205...1215 Speed 4th rack travel in: 1350 cm3 : 8.00 Spread rpm : 0.00...1.00 1000 s: (12.0 Speed Ameroid pressure h: 1200 LOW IDLE 1 Speed rpm Del.quantity cm3/: 223.5...229.5 Control lever position degrees: 10...18 1000 s: (220.5...232.5) cm3 : 8.00 Spread 1000 s: (12.0) Testing: Speed : 275 COM Aneroid pressure h: -Minimum rack trave: 8.10 Speed rpm : 1000 Del.quantity cm3/: 94.5...98.5 : 350 Speed COM 1000 s: (92.5...100.5) Rack travel in mm : 6.30...6.50 CONSTANT REGULATION rpm : 325...520 Speed BREAKAWAY TORQUE CONTROL 1st version Dimension a mm : ? 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 900 full load rack tr: 13.00 Rack travel in a: 14.50...14.60 rpm : 1045...1075 Speed 2nd speed rpm : 650 Rack travel in m: 13.40...13.80 STARTING FUEL DELIVERY 3rd speed rpm : 1000 Rack travel in m: 14.00...14.20 4th speed rpm : 750 Speed rpm : 100 Del.quantity cm3/ : 180.0...220.0 Rack travel in m: 13.70...14.10 1000 s: (175.0...225.0) Aneroid/Altitude Rack travel in mm : 12.00...13.00 Compensator Test LOW IDLE Speed rpm : 350 Rack travel in mm : 6.30...6.50 1st version Setting : 1000 Del.quantity cm3/: 20.0...26.0 Speed rpm Pressure hPa : 1200 1000 s: (18.0...28.0) Rack travel mm : 14.00...14.20 Spread cm3 : 8.00 1000 s: (12.00) Measurement $1/\min : 1000$ Speed Remarks: : C.D.C. # 3922446 1st pressure hPa : -Rack travel in m: 9.20...9.60 Start-of-delivery mark = 5.5° after 2nd pressure hPa : 325 start of delivery cyl. 1.

Rack travel in m: 10.60...10.70 3rd pressure hPa : 765

Note remarks

Test sheet : CUM
Edition : 16.07.93
Replaces : 06.93
Test oil : ISO-4113

Combination no. : 0 402 736 836

Injection pump

Pump designation : PES6P120A120RS7265 EP type number : 0 412 726 882

Governor

Governor design. : RQV350...1000PA964

-14K

Governer no. : 0 421 815 325

Customer—spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 205.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 2 417 413 086

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 90...110

Test nozzle holder

assembly : 1 688 901 103

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test Lines : 1 680 750 015

Outside diameter × Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05

: (3.90...4.10)

Rack travel in mm: 9.00...12.00 Firing order: 1-5-3-6-2-4

Phasing : 0-50-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.5 Del.quantity cm3/ : 2.0...2.6

100 s: (1.8...2.8)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 450

travel mm : 3.10...3.50

3rd speed rpm : 600

travel mm : 5.10...5.50

4th speed rpm : 1000

travel mm : 8.10...8.30

5th speed rpm : 1200

travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

cin3 : 5.00 Rack travel in m: 13.10...13.50 Spread 1000 : (9.00) START CUT-OUT RATED SPEED 1/min : 290 (300) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 62...70 Testina: 1st version 1st rack travel in: 12.90 Aneroid pressure h: 1200 rom : 1145...1175 : 650 Speed Speed **CDM** Del.quantity cm3/: 203.5...209.5 2nd rack travel in: 4.00 rpm : 1295...1305 1000 s: (200.5...212.5) Speed cm3 : 8.00 4th rack travel in: 1400 Spread Speed ram : 0.00...1.001000 s: (12.0) Ameroid pressure h: 1200 LOW IDLE 1 : 750 **CDM** Control lever Del. quantity cm3/: 209.5...215.0 position degrees: 12...20 1000 s: (206.5...218.5) cm3 : 8.00 Spread 1000 s: (12.0) Testing: Speed : 275 L DIII Aneroid pressure h: -Minimum rack trave: 8.10 rpm : 1000 Speed rpm : 350 Del.quantity cm3/: 94.5...98.5 Rack travel in mm : 6.30...6.50 1000 s: (92.5...100.5) CONSTANT REGULATION rpm : 325...520 Speed BREAKAWAY TORQUE CONTROL 1st version Dimension a mm :? 1mm rack travel less than Tarque control curve - 1st version 1st speed rpm : 1000 full load rack tr: 12.90 Rack travel in m: 14.50...14.60 rom : 1145...1175 Speed 2nd speed rpm : 650 Rack travel in m: 13.10...13.50 STARTING FUEL DELIVERY 3rd speed rpm : 1100 Rack travel in m: 13.90...14.10 4th speed rpm : 750 Speed : 100 rpm Del.quantity cm3/: 180.0...220.0 Rack travel in m: 13.40...13.80 1000 s: (175.0...225.0) Aneroid/Altitude Rack travel in mm : 12.00...13.00 Compensator Test LOW IDLE 1st version Speed rpm : 350 Rack travel in mm : 6.30...6.50 Setting Speed : 1000 Del.quantity cm3/: 20.0...26.0 (ngn hPa : 1200 1000 s: (18.0...28.0) Pressure Rack travel mm : 14.50...14.60 cm3 : 8.00Spread 1000 s: (12.00) Measurement 1/min : 1000 Speed Remarks: : C.D.C. # 3922427 1st pressure hPa : -Rack travel in m: 9.20...9.60 Start-of-delivery mark = 5.5° after 2nd pressure hPa : 325 start of delivery cyl. 1. Rece travel in m: 10.60...10.70 3rd pressure hPa : 765

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

: CUM Test sheet

Edition : 16.08.93

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 736 837

Injection pump

Pump designation : PES6P120A120RS7265

EP type number : 0 412 726 882

Governor

Governor design. : RQV350...1100PA964

-15K

: 0 421 815 332 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : óCTA-A

: 186.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 086

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 90...110

Test nozzle holder

: 1 688 901 103 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.7

Test lines : 1 680 750 015

Outside diameter * Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05

: (3.90...4.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 6.4...6.6 bel.quantity cm3/: 2.0...2.6

100 s: (1.8...2.8) Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed travel mm

: 1.80...2.00 rpm : 450 2nd speed

: 3.10...3.50 travel mm 3rd speed rpm : 600

travel mm

: 5.10...5.50

rpm : 1000 4th speed

: 8.10...8.30 travel mm

5th speed rpm : 1200

travel mm : 9.60...15.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1200

Del.quantity : 215.5...217.5

1000 : (212.5...220.5)

Spread

cm3 : 5.90 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 114...126

Testing:

1st rack travel in: 12.40

rpm : 1150...1180 Speed

2nd rack travel in: 4.00

Speed rpm : 1295...1305 4th rack travel in: 1400

Speed nom : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 62...74

Testing:

: 275 Speed mom.

Minimum rack trave: 8.10

rom : 350 Speed

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 13.80...13.90

: 650 2nd speed nom

Rack travel in m: 13.10...13.50

3rd speed rpm : 1100

Rack travel in m: 13.40...13.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 1000

hPa : 1200 Pressure

: 13.80...13.90 Rack travel mm

Measurement

1/min: 1000 Speed

1st pressure hPa : -

Rack travel in m: 9.20...9.60

2nd pressure hPa : 325 Rack travel in m: 10.60...10.70

3rd pressure hPa : 765

Rack travel in m: 13.10...13.50

START CUT-OUT

Speed

1/min: 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed : 650 **m**Cn

Del.quantity cm3/: 205.0...211.0 1000 s: (202.0...214.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -: 1000 Speed rpm

Del.quantity cm3/: 94.5...98.5

1000 s: (92.5...100.5)

BREAKAWAY

ist version

1mm rack travel less than

full load rack tr: 12.40

rpm : 1150...1180 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 180.0...220.0

1000 s: (175.0...225.0)

Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.60
Del.quantity cm3/: 20.0...26.0

1000 s: (18.0...28.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: C.D.C. # 3922449

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

: CUM Test sheet : 16.07.93 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 736 842

Injection pump

Pump designation : PES6P120A120RS7281 : 0 412 726 890

EP type number Governor

Governor design. : RQV400...1250PA1060

-1K

: 0 421 815 344 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 119.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min, 1/h: 105...125

Test nozzle holder

: 1 688 901 103 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.7

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x3.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 3.55...3.65 Prestroke mm

: (3.50...3.70)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 9-60-120-180-240-300

Tolerance + - • : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 15.7...15.9

100 s: (15.4...16.2)

Spread cm3 : 0.8

100 s: (1.2)

rpm : 400.02nd speed Rack travel in mm: 6.0...6.4 Del.quantity cm3/: 1.5...2.1

100 s: (1.3...2.3) Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

: 1.40...1.60 travel mm rom : 550 2nd speed

: 2.50...2.90 travel mm

mpm : 800 3rd speed

: 4.00...4.40 travel mm rpm : 1250 4th speed

: 6.90...7.10 travel mm

: 1500 5th speed

: 9.10...9.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 1200

Del.quantity : (157.0...162.0)

cm3 : 8.00 Spread 1000 : (12.00) RATED SPEED 1st version Control Lever position degrees: 58...66 Testing: 1st rack travel in: 12.40 rpm : 1320...1330 Speed 2nd rack travel in: 4.00 Speed rpm : 1465...1495 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 12...20 Testing: Speed rom : 275 Minimum rack trave: 7.80 mom : 400 Rack travel in mm : 6.00...6.40 CONSTANT REGULATION mom : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 13.40...13.50 2nd speed rpm : 800 Rack travel in m: 11.60...12.00 3rd speed 5500 : 500 Rack travel 5500 : 11.40...11.80 4th speed rpm : 900 Rack travel in m: 12.00...12.40 Aneroid/Altitude Compensator Test 1st version Settina : 1250 Speed **m** hPa : 1200 Pressure Rack travel mm : 13.40...13.50 Measurement 1/min: 1250 Speed ist pressure hPa : -Rack travel in m: 10.30...10.70 2nd pressure hPa : 265

Rack travel in m: 11.10...11.20

3rd pressure hPa : 440

START CUT-OUT Speed 1/min: 250 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 800 Del.quantity cm3/ : 124.5...130.5 1000 s: (121.5...133.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1200 rpm : 900 Speed Del.quantity cm3/: 137.5...143.5 1000 s: (134.5...146.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 1250 Del.quantity cm3/ : 108.5...112.5 1000 s: (106.5...114.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1320...1330 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 135.0...175.0 1000 s: (130.0...180.0) Rack travel in mm : 13.00...14.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 6.00...6.40 Del.quantity cm3/: 15.0...21.0 1000 s: (13.0...23.0) cm3 : 4.00 Spread 1000 s: (8.00) Remarks: : C.D.C. # 3925085 Start-of-delivery blocking 5,75° after start of delivery of cylinder no. 1.

Rack travel in m: 12.50...12.90

Note remarks

Test sheet : CUM Edition : 16.08.93

Replaces

Test oil : ISO-4113

: 0 402 736 843 Combination no.

Injection pump

Pump designation : PES6P120A120RS7281 : 0 412 726 890

EP type number Governor

Governor design. : RQV400...1250PA1060K

Governer no. : 0 421 815 343

Customer-spec. information Customer : C.D.C.

Engine : 6BTA-A

: 130.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 105...125

Test nozzle holder

: 1 688 901 103 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x3.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 3.55...3.65 Prestroke mm

: (3.50...3.70) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SELLING

1st speed rpm: 1250

Rack travel in mm : 13.80...13.90

Dei.quantity cm3/: 16.8...17.0

100 s: (16.5...17.3)

Spread cm3 : 0.8

100 s: (1.2)

rpm : 400.02nd speed

Rack travel in mm: 6.3...6.7 Del.quantity cm3/: 1.5...2.1

100 s: (1.3...2.3)

cm3 : 0.4 Spread

100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

: 1.40...1.60 travel mm

2nd speed rpm : 550

travel mm : 2.50...2.90

3rd speed rpm : 800

: 4.00...4.40 travel mm

: 1250 4th speed rpm

: 6.90...7.10 travel mm

: 1500 5th speed LDW

: 9.10...9.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

: 168.5...170.5 Del.quantity

1000 : (165.5...173.5)

Spread

cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 58...66

Testing:

1st rack travel in: 12.80

rpm : 1310...1320 Speed

2nd rack travel in: 4.00

Speed rpm : 1465...1495

4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Testina:

rpm : 300 Speed

Minimum rack trave: 7.80 Speed rpm : 400

Rack travel in mm: 6.30...6.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 13.80...13.90

2nd speed nom: 800

Rack travel in m: 12.10...12.30 3rd speed rpm : 500

Rack travel in m: 11.60...12.00

Aneroid/Altitude

Compensator Test

1st version

Setting

: 1250 Speed rpm

hPa : 1200 Pressure : 13.80...13.90 Rack travel mm

Measurement

1/min: 1250 Speed

1st pressure hPa : -

Rack travel in m: 10.40...10.80 2nd pressure hPa : 260

Rack travel in m: 11.30...11.40

3rd pressure hPa : 430

Rack travel in m: 13.00...13.40

START CUT-OUT

1/min: 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 800 Speed rpm

Del.quantity cm3/: 137.0...143.0 1000 s: (134.0...145.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

rpm : 1250 Speed

Del.quantity cm3/: 110.0...114.0 1000 s: (108.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 1310...1320 Speed

STARTING FUEL DELIVERY

Speed : 100 npm

Del.quantity cm3/: 135.0...175.0

1000 s: (130.0...180.6)

Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 6.30...6.70 Del.quantity cm3/: 15.0...21.0

1000 s: (13.0...23.0) cm3 : 4.00

Spread

1000 s: (8.00)

Remarks:

: C.D.C. # 3925086

Start-of-delivery blocking 5,75° after

start of delivery of cylinder no. 1.

Note remarks

Test sheet : CUM Edition : 16.07.93

Replaces

Test oil : ISO-4113

: 0 402 736 844 Combination no.

Injection pump

Pump designation : PES6P120A120RS7287

EP type number

: 0 412 726 896

Governor

: RQV400...1250PA964 Governor design.

-21K

: 0 421 815 354 Governer no.

Customer-spec. information Customer : C.D.C.

Snaine : 68TA-A

1st version kW : 171.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 036

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 90...110

Test nozzle holder

: 1 688 901 103 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY Test pressure, bar: 22...24

Prestroke am

: 3.55...3.65 : (3.50...3.70)

Rack travel in mm : 10.00...13.00 Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 400.0 Rack travel in mm: 6.1...6.5 Del.quantity cm3/: 1.5...2.1 100 s: (1.3...2.3)

cm3 : 0.4Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

: 1.40...1.60 travel mm 2nd speed rpm : 550 travel mm : 3.10...3.50

3rd speed rpm : 800

: 4.30...4.70 travel mm

rpm : 1250 4th speed

travel mm : 7.00...7.20

rpm : 1500 5th speed

: 9.20...9.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1150 Aneroid pressure h: 1200

: 199.0...201.0 Del.quantity

1000 : (196.0...204.0)

cm3 : 8.00 1000 : (12.00) Spread

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 13.50

rpm : 1310...1320 Speed

2nd rack travel in: 4.00

Speed rpm : 1460...1490 4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed : 300 POR Minimum rack trave: 7.80 rpm : 400

Rack travel in mm : 6.10...6.50

CONSTANT REGULATION

rom : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 15.00...15.10

2nd speed rpm : 900

Rack travel in m: 14.30...14.50

3rd speed rpm : 600

Rack travel in m: 13.20...13.60 h speed rpm : 1250

4th speed rpm

Rack travel in m: 14.50...14.70

Aneroid/Altitude

Compensator Test

1st version

Settina

Speed : 1150 L DU Pressure hPa : 1200

Rack travel mm : 15.00...15.10

Measurement

1/min : 1150 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.50

2nd pressure hPa : 355

Rack travel in m: 11.30...11.40

3rd pressure hPa : 645

Rack travel in m: 13.30...13.70

START CUT-OUT

1/min : 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 900
Del.quantity cm3/ : 183.0...189.0
1000 s: (180.0...192.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 1150 Del.quantity cm3/ : 94.5...98.5 1000 s: (92.5...100.5)

GREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

rpm : 1310...1320 Speed

STARTING FUEL DELIVERY

Speed : 100 **Lbw**

Del.quantity cm3/: 135.0...175.0 1000 s: (130.0...180.0)

Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 6.10...6.50 Del.quantity cm3/: 15.0...21.0 1000 s: (13.0...23.0)

cm3 : 4.00 Spread 1000 s: (8.00)

Remarks:

: C.D.C. # 3921925

Mark position of port-opening mark 6.25° before port opening cylinder 1

on clutch

Note remarks

Test sheet : CUM

Edition : 16.08.93

Replaces

: --

Test oil : ISO-4113

Combination no. : 0 402 736 845

Injection pump

Pump designation : PES6P120A120RS7286

EP type number : 0 412 726 894

Governor

Governor design. : RQV350...1100PA964

-20K

Governer no. : 0 421 815 352

Customer—spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 224.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 2 417 413 086

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 95...115

Test nozzle holder

assembly : 1 688 901 103

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05

: (3.90...4.10)

Rack travel in mm: 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm: 15.00...15.10

Del.quantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 6.4...6.8 Del.quantity cm3/ : 1.8...2.4

100 s: (1.6...2.6)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 350

travel mm : 2.10...2.40

2nd speed npm : 450

travel mm : 3.20...3.60

3rd speed rpm : 900

travel mm : 5.60...6.00

4th speed rpm: 1200

travel mm : 8.10...8.30

5th speed rpm : 1400

travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

Del.quantity : 249.0...251.0

1000 : (246.0...254.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 13.30 rpm : 1240...1270 Speed

2nd rack travel in: 4.00

rpm : 1395...1405 Speed

4th rack travel in: 1475

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 14...22

Testing:

Speed : 275 r pm Minimum rack trave: 7.70 rpm : 350

Rack travel in mm : 6.40...6.80

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 15.00...15.10

rom : 650 2nd speed

Rack travel in m: 13.30...13.70

3rd speed rpm : 1200

Rack travel in m: 14.30...14.50

4th speed rpm

th speed rpm : 750 Rack travel in m: 13.60...14.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 1100 **CDM** Pressure hPa : 1200

Rack travel mm : 15.00...15.10

Measurement

Speed 1/min: 1100

1st pressure hPa : -

Rack travel in m: 9.20...9.60

2nd pressure hPa : 345 Rack travel in m: 10.80...10.90

3rd pressure hPa : 725

Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min: 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 750 mgn

Del.quantity cm3/: 210.5...216.5 1000 s: (207.5...219.5)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 1000

Del.quantity cm3/: 90.5...94.5 1000 s: (88.5...96.5)

EREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

Speed rpm : 1240...1270

STARTING FUEL DELIVERY

: 100 Speed LDW

Del.quantity cm3/: 180.0...220.0

1000 s: (175.0...225.0) Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.40...6.80 Del.quantity cm3/: 18.0...24.0 1000 s: (16.0...26.0)

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

: C.D.C. # 3922425

Start-of-delivery blocking 6,5° after start of delivery of cylinder no. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

Test sheet

Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 745 800

Injection pump

Pump designation : PES5P120A720LS7101

-10

EP type number : 0 412 725 811

Governor

Governor design. : RQ300/1050PA690

Governer no. : 0 421 801 234

Customer—spec. information

Customer : DAIMLER-BENZ

Engine : 0M429 LA

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.50 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-5-4-2

: 0-72-144-216-288 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.0...6.4 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1050

Aneroid pressure h: 700

Del.quantity : 201.0...203.0 1000 : (198.0...206.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.80 Speed rpm : 1095...1110 2nd rack travel in: 4.00 rpm : 1145...1185 Speed 4th rack travel in: 1300 rom : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.1 Testing: rpm : 100 Speed Minimum rack trave: 7.70 rpm : 300 Speed Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00 Speed rpm : 380...420 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : -Rack travel mm : 12.00...12.30 Measurement Speed 1/min: 500 1st pressure hPa : 240 Rack travel in m: 12.30...12.40 2nd pressure hPa : 350 Rack travel in m: 13.30...13.50 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 600 Del.quantity cm3/: 197.0...201.0 1000 s: (194.0...204.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 700 Speed rpm : 900 Del.quantity cm3/: 204.0...208.0

1000 s: (201.0...211.0)

cm3 : 8.00

1000 s: (12.0)

rpm : 500

Del.quantity cm3/: 157.0...159.0 1000 s: (154.0...162.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.80 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...180.0 1000 s: (156.0...184.0)

:

Remarks:

L12

Spread

Speed

Aneroid pressure h: -

Note remarks

Test sheet : MB

Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 745 803

Injection pump

: PES5P120A720LS7152 Pump designation

-10

EP type number : 0 412 725 812

Governor

Governor design. : RQ300/1050PA690-2

Governer no. : 0 421 801 427

Customer—spec. information

Customer : DAIMLER-BENZ

Engine : 0M429 LA

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rom : 1050

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.3...6.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 800

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.70 mon : 1095...1110 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1300 Speed rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.4 Testina: rpm : 200 Speed Minimum rack trave: 8.30 Speed rpm : 300
Rack travel in mm : 6.30...6.60
Rack travel in mm : 2.00
Speed rpm : 365...405 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 500 Pressure hPa : -Rack travel mm : 11.20...11.50 Measurement 1/min: 500 Speed 1st pressure hPa : 250 Rack travel in m: 11.40...11.50 2nd pressure hPa : 500 Rack travel in m: 12.70...12.90 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 Speed rpm : 600 Del.quantity cm3/: 204.0...210.0 1000 s: (201.0...213.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0) cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.70 Speed rom : 1095...1110

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

:

Note remarks

Test sheet

Edition

: 30.04.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 745 805

Injection pump

Pump designation : PES5P120A720LS7160

-10

EP type number

: 0 412 725 813

Governor

Governor design. : RQ300/1050PA774-2

Governer no.

: 0 421 801 450

Customer-spec. information

Customer

: DAIMLER-BENZ

Engine

: 0M449 A

1st version kW

: 184.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 019

Openina .

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

: 5.20...5.30

Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 1-3-5-4-2

Phasing

: 0-72-144-216-288

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 13.10...13.30

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 300.0

Rack travel in mm: 5.7...6.3

Del.quantity cm3/ : 1.6...2.2

Spread

100 s: (1.3...2.5) cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 600

Aneroid pressure h: 650

: 196.0...198.0

Del.quantity 1000

: (193.0...201.0)

cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed

COM

: 600

Rack travel in rm: 20.0 Testina: 1st rack travel in: 12.60 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm: 6.0 Testina: : 200 Speed rpm Minimum rack trave: 7.90 Speed rpm : 300 Rack travel in mr.: 5.70...6.30 Rack travel in mm : 2.00 rom : 365...405 Speed TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 1050 Reck travel in m: 13.60...13.80 2nd speed rom : 750 Rack travel in m: 14.00...14.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed mon. hPa : 650 Pressure : 13.10...13.30 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 250 Rack travel in m: 11.20...11.40 2nd pressure hPa : 400 Rack travel in m: 12.50...12.70 3rd pressure hPa : 750 Rack travel in m: 13.20...13.30 * 4th pressure hPa : 850 Rack travel in m: 13.60...13.80 5th pressure hPa : -

Rack travel in m: 10.80...11.10

FUEL DELIVERY CHARACTERISTICS

1/min : 220 (240)

1st version Aneroid pressure h: 1200 : 1050 Speed man Del.quantity cm3/: 208.0...211.0 1000 s: (205.0...214.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1200 Speed rpm : 750
Del.quantity cm3/ : 216.0...220.0
1000 s: (213.0...223.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed man Del.quantity cm3/: 150.0...152.0 1000 s: (147.0...155.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.60 rpm : 1095...1110 Speed STARTING FUEL DELIVERY : 100 Speed man Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

START CUT-OUT

Note remarks

Test sheet

Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 745 806

Injection pump

Pump designation : PES5P120A720LS7163

-10

EP type number : 0 412 725 814

Governor

Governor design. : RQ300/1050PA774-4

Governer no. : 0 421 801 453

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M449 LA

1st version kW : 221.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 1-3-5-4-2 Firing order

: D-72-144-216-288 Phesing

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.6...5.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 800

Del.quantity : 235.0...237.0

1000 : (232.C...240.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed COM : 600 Rack travel in am: 20.0 Testing: 1st rack travel in: 12.00 rpm : 1095...1110 Speed

2nd rack travel in: 4.00 rom : 1160...1190 Speed

4th rack travel in: 1300

Speed rom : 0.00...1.50

LOW IDLE 1

Setting point wout bumper spring

Speed : 300 COM Rack travel in mm: 5.7

Testing:

Speed rpm : 200 Minimum rack trave: 7.60 rpm : 300

Rack travel in m:: 5.60...5.90

Rack travel in mm: 2.00 Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13.00...13.20 2nd speed nom : 750

Rack travel in m: 14.40...14.60

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rpm hPa : 800 Pressure

Rack travel mm : 13.60...13.80

Measurement

Speed 1/min: 600

1st pressure hPa : 200

Rack travel in m: 11.00...11.20

2nd pressure hPa : 450

Rack travel in m: 13.00...13.20

3rd pressure hPa : 1000

Rack travel in m: 13.70...13.80 *

4th pressure hPa : 1125

Rack travel in m: 14.10...14.30

5th pressure hPa : -

Rack travel in m: 10.00...10.40

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

: 1050 rpm Del.quantity cm3/: 228.0...231.0

1000 s: (225.0...234.0)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: 1400

: 750 Speed MC1

Del.quantity cm3/: 250.0...254.0

1000 s: (247.0...257.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

rpm_ : 500 Speed Del.quantity cm3/: 146.0...148.0

1000 s: (143.0...151.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 220.0...240.0

1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 745 807

Injection pump

Pump designation: PES5P120A720LS7174-1

: 0 412 725 815 EP type number

Governor

Governor design. : RQ300/1050PA774-2

Governer no. : 0 421 801 450

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM449 A

: 184.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.4...7.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del.quantity : 190.0....201.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom Rack travel in mm: 20.0

Testing: 1st rack travel in: 13.40 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.7 Testing: rpm : 200 Speed Minimum rack trave: 8.70 rpm : 300 Rack travel in mm : 6.40...7.00 Rack travel in mr.: 2.00 Speed rpm : 370...410 TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 14.40...14.60 2nd speed rom : 750 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed חסח Pressure hPa : 650 : 14.10...14.30 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 250 Rack travel in m: 12.20...12.40 2nd pressure hPa : 400 Rack travel in m: 13.50...13.70 3rd pressure hPa : 750 Rack travel in m: 14.20...14.30 * 4th pressure hPa : 850 Rack travel in m: 14.60...14.80 5th pressure hPa : -Rack travel in m: 11.90...12.20 START CUT-OUT

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/ : 208.0...211.0 1000 s: (205.0...214.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1200 : 750 Speed rpm Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -: 500 Speed **Lbw** Del.quantity cm3/: 150.0...152.0 1000 s: (147.0...155.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.40 Speed rpm : 1095...1110 STARTING FUEL DELIVERY : 100 Speed **LDUI** Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Note remarks

Test sheet

: 30.04.92 Edition

Replaces Test oil

: ISO-4113

Combination no. : 0 402 745 808

Injection pump

Pump designation: PES5P120A720LS7175

-10

EP type number

: D 412 725 816

Governor

Governor design. : RQ300/1050PA774-4

: 0 421 801 453 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M449 LA

: 221.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 1-3-5-4-2

: 0-72-144-216-288 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm: 5.6...5.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

: 235.0...237.0 Del.quantity

1000 : (232.0...240.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point: Speed : 600 **CDW**

Rauk travel in mm : 20.0 Testina: 1st rack travel in: 12.00 rom : 1095...1110 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1300 riom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring **CDM** Rack travel in mm: 5.7 Testina: Speed : 200 rpm Minimum rack trave: 7.60 rpm : 300 Rack travel in mr.: 5.60...5.90 Rack travel in mm: 2.00 Speed COM : 370...410 TORQUE CONTROL Dimension a mm : 0.65 Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 13.00...13.20 2nd speed rpm : 750 Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm hPa : 800 Pressure : 13.60...13.80 Rack travel ma Measurement 1/min : 600 Speed 1st pressure hPa : 200 Rack travel in m: 11.00...11.20 2nd pressure hPa : 450 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1000 Rack travel in m: 13.70...13.80 * 4th pressure hPa : 1125 Rack travel in m: 14.10...14.30 5th pressure hPa : -Rack travel in m: 10.00...10.40 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1400 : 1050 Speed rpm -Del.quantity cm3/: 228.0...231.0 1000 s: (225.0...234.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1400 : 750 Speed **MCL** Del.quantity_cm3/: 250.0...254.0 1000 s: (247.0...257.0) : 8.00 Spread cm3 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet

Fdition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 745 809

Injection pump

Pump designation: PES5P120A720LS7160

-10

: 0 412 725 813 EP type number

Governor

Governor design. : RQV300...1050PA940

: 0 421 813 824 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M449 A Engine

1st version kW : 184.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 1- 3- 5- 4- 2 Firing order

Phasing : 0-72-144-216-288

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rom: 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.5...7.1

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.10...1.30 travel mm 2nd speed

rpm : 600 travel mm

: 4.90...5.10

3rd speed rom : 800

: 5.80...6.10 travel mm

4th speed : 1100 man.

: 8.20...8.60 travel mm

: 1175 5th speed man

: 9.50...10.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1130 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 650 Del.quantity : 196.0...198.0 1000 : (193.0...201.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testina: 1st rack travel in: 13.60 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 80...38 Testing: Speed rom : 200 Minimum rack trave: 8.80 rpm : 300 Rack travel in mm : 6.50...7.10 CONSTANT REGULATION rom : 300...400 Speed TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 14.50...14.70 2nd speed rpm : 750 Rack travel in m: 14.90...15.10 : 900 3rd speed rpm Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 man Pressure hPa : 650 Rack travel mm : 13.10...13.30 Measurement

 $1/\min : 600$

1st pressure hPa : 250

Rack travel in m: 11.20...11.40 2nd pressure hPa : 400 Rack travel in m: 12.50...12.70 3rd pressure hPa : 750 Rack travel in m: 13.20...13.30 * 4th pressure hPa : 850 Rack travel in m: 14.10...14.30 5th pressure hPa : -Rack travel in m: 11.90...12.20 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1050 Speed Del.quantity cm3/: 208.0...211.0 1000 s: (205.0...214.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1200 : 750 Speed rpm Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0) cm3 : 8.00 Spread 1000 s: (12.0) Ameroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 150.0...152.0 1000 s: (147.0...155.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.60 rpm : 1090...1100 Speed STARTING FUEL DELIVERY : 190 Speed rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

:

Speed

Note remarks

Test sheet : M

Edition : 30.04.92

Replaces : -Test oil : ISO-4113

Combination no. : 0 402 745 810

Injection pump

Pump designation : PES5P120A720LS7163

-10

EP type number : 0 412 725 814

Governor

Governor design. : RQV300...1050PA940-1

Governer no. : 0 421 813 825

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 689 750 067

Outside diameter x Wall thickness

x Length may : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _____ BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...5.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.30

2nd speed npm : 600

**avel mm : 4.90...5.10

3rd speed rpm : 800

travel mm : 5.80...6.10

4th speed rpm : 1100 travel mm : 8.20...8.60

5th speed rpm : 1175

travel mm : 9.50...10.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1070 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 800 : 235.0...237.0 Del.quantity Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 116...124 Testina: 1st rack travel in: 12.00 rom : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1250 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 80...88 Testina: Speed : 200 FIDE Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 5.60...5.90 CONSTANT REGULATION rpm : 300...400 Speed TORQUE CONTROL Dimension a mm : 1.30 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.00...13.20 2nd speed rpm : 750 Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 800 Pressure Rack travel mm : 13.60...13.80

1000 : (232.0...240.0) Measurement 1/min : 600Speed 1st pressure hPa : 200

Rack travel in m: 11.00...11.20

2nd pressure hPa : 450

Rack travel in m: 13.00...13.20 3rd pressure hPa : 1000 Rack travel in m: 13.70...13.80 * 4th pressure hPa : 1125 Rack travel in m: 14.10...14.30 5th pressure hPa : -Rack travel in m: 10.00...10.40 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 1050 Speed MC Del.quantity cm3/: 228.0...231.0 1000 s: (225.0...234.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1400 : 750 Speed rom Del.quantity cm3/: 250.0...254.0 1000 s: (247.0...257.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version

1mm rack travel less than

full load rack tr: 12.00 rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 220.0...240.0

1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : ME

Edition : 30.04.92

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 804

Injection pump

Pump designation : PES6P120A720LS7107

-10

EP type number : 0 412 726 864

Governor

Governor design. : RQ300/1100PA757

Governer no. : 0 421 801 294

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M427ha

1st version kW : 206.0 Ratted speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...110

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 19.7...19.9

106 s: (19.4...20.2)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.8...6.0

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION
Control-Lever position

Control-lever position
Degree: -2

peed nom: 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 750

bel.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm: 650

Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.40 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1220...1250 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring : 300 COM Rack travel in mm: 5.9 Testina: rpm : 100 Speed Minimum rack trave: 7.50 rpm : 300 Rack travel in mr. : 5.80...6.00 Rack travel in mm: 2.00 Speed : 380...420 LDW. Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 man. hPa : -Pressure Rack travel mm : 10.70...11.00 Measurement 1/min : 500Speed 1st pressure hPa : 230 Rack travel in m: 11.00...11.20 2nd pressure hPa : 370 Rack travel in m: 12.40...12.60 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 Speed COM : 600 Del.quantity cm3/: 195.0...198.0

1000 s: (192.0...201.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) L28

Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

rom : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

Note remarks

Test sheet : MB

Edition : 30.04.92

Replaces : Test oil : ISO-4113

150 4115

Injection pump

Combination no.

Pump designation: PES6P120A720LS7114

-10

: 0 402 746 805

EP type number : 0 412 726 865

Governor

Governor design: : RQ300/900PA775 Governer no: : 0 421 801 319

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M/47 LA

1st version kW : 300.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...110

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 22.0...22.2

100 s: (21.7...22.5)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.0...5.2

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 750 Aneroid pressure h: 750

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm: 20.0 Testina: 1st rack travel in: 10.20 rpm : 945...960 Speed 2nd rack travel in: 4.00 rpm:: 990...1020 Speed 4th rack travel in: 1150 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.1 Testing: Speed rom : 100 Minimum rack trave: 6.70 rpm : 300 Rack travel in mr.: 5.00...5.20 Rack travel in mm: 2.00 rpm : 370...410 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 11.20...11.40 2nd speed rpm : 750 Rack travel in m: 12.40...12.60 3rd speed rpm : 850 Rack travel in m: 11.80...11.90 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : -Pressure Rack travel mm : 9.40...9.60 Measurement Speed 1/min: 500 1st pressure hPa : 350 Rack travel in m: 9.90...10.10 2nd pressure hPa : 550 Rack travel in m: 11.30...11.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Speed rpm : 900 Del.quantity cm3/: 197.0...203.0 1000 s: (194.0...206.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -: 500 POM Del.quantity cm3/: 142.0...149.0 10% 彩 (139.0...152.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than

full load rack tr: 10.20 Speed rpm : 945...960 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

M02

1st version

Aneroid pressure h: 750

Note remarks

Test sheet

Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 808

Injection pump

Pump designation: PES6P120A720LS7107

-10

EP type number : 0 412 726 864

Governor

Governor design. : RQ300/1100PA805 Governer no. : 0 421 801 352

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : CM/47ha

: 206.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

: 0-50-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.8...6.2 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 750

Del.quantity : 197.0...202.0)

: 5.00 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed **CDW** : 650

Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.40 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1220...1250 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.9 Testing: rpm : 100 Speed Minimum rack trave: 7.50 rpm : 300 Rack travel in mr.: 5.80...6.00 Rack travel in mm : 2.00 rpm : 380...420 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed man : 500 Pressure hPa : -Rack travel mm : 11.40...11.70 Measurement 1/min : 500 Speed 1st pressure hPa : 230 Rack travel in m: 11.70...11.90 2nd pressure hPa : 370 Rack travel in m: 13.10...13.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 Speed rpm : 600 Del.quantity cm3/ : 193.0...196.0 1000 s: (190.0...199.0) Spread cm3 : 8.00

1000 s: (12.0)

rpm : 500

Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0)

Aneroid pressure h: -

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0

1000 s: (146.0...174.0)

Remarks:

MO4

Speed

Note remarks

Test_sheet : ME

Edition : 30.04.92

Replaces Test oil

: ISO-4113

Combination no. : 0 402 746 841

Injection pump

Pump designation : PES6P12UA720LS7114

-12

EP type number : 0 412 726 866

Governor

Governor design. : RQ300/1050PA774-3

Governer no. : 0 421 801 451

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter × Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)
Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.8...6.2

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3) Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

peed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 600 Aneroid pressure h: 900

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) Rack travel in mm: 20.0 Testing: Spread cm3 : 8.001st rack travel in: 13.20 1000 s: (12.0) Speed rpm : 1095...1110 Aneroid pressure h: 1500 2nd rack travel in: 4.00 Speed rpm : 700 Del.quantity cm3/: 246.0...249.0 1000 s: (243.0...252.0) Speed rpm : 1165...1195 4th rack travel in: 1300 cm3 : 8.00 Speed rpm : 0.00...1.50 Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: -: 500 Setting point w/out bumper spring Speed rpm Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) rpm : 300 Speed Rack travel in mm: 6.0 Speed rpm : 300 Rack travel in mm : 5.80...6.20 Spread cm3 : 8.00 1000 s: (12.0) Reck travel in mm : 2.00 Speed nom : 360...400 **BREAKAWAY** TORQUE CONTROL Dimension a mm : ? 1st version : 1050 2nd speed rpm 1mm rack travel less than Rack travel in m: 14.20...14.40 3rd speed rpm : 700 full load rack tr: 13.20 Rack travel in m: 14.70...14.90 rom : 1095...1110 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed : 100 mqn Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) 1st version Setting : 600 Speed mqn Pressure hPa : 700 Remarks: Rack travel mm : 14.00...14.20 : Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 11.80...12.00 2nd pressure hPa : 500 Rack travel in m: 13.40...13.60 3rd pressure hPa : 1100 Rack travel in m: 14.20...14.40 4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 10.40...10.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 rpm : 1050 Speed

MO6

Note remarks

Test sheet

: 30.04.92 Edition

Replaces Test oil

: ISO-4113

Combination no. : 0 402 746 843

Injection pump

Pump designation : PES6P120A720LS7161

-10

EP type number

: 0 412 726 868

Governor

Governor design. : RQ300/1050PA897 : 0 421 801 452

Governer no.

Customer-spec. information

Customer

: DAIMLER-BENZ

Engine

: CM/47 A

1st version kW

: 213.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order

: 6-2-4-1-5-3

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.0...6.4

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread

cm3 : 0.6

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 600

Aneroid pressure h: 680 Del.quantity

: 201.0...203.0

1000 : (198.0...206.0)

cm3

: 5.00

1000 : (9.00)

RATED SPEED

Spread

1st version

Setting point:

Speed : 650 rpm

Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.50 rom : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1250 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm : 6.2 Testina: Speed : 200 MON Minimum rack trave: 7.70 rpm : 300 Rack travel in mr.: 6.00...6.40 Rack travel in mm : 2.00 Speed rpm : 380...420 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.50...13.70 and speed rpm : 750 2nd speed nom Rack travel in m: 14.80...15.00 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed COM Pressure hPa : 680 Rack travel mm Measurement Speed

: 14.10...14.30 $1/\min : 600$ 1st pressure hPa : 300

Rack travel in m: 12.40...12.60 2nd pressure hPa : 400 Rack travel in m: 13.10...13.30 3rd pressure hPa : 800 Rack travel in m: 14.20...14.30 4th pressure hPa : -Rack travel in m: 11.30...11.60

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 rpm : 1050 Del.quantity cm3/: 193.0...195.0 1000 s: (190.0...198.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1200 : 750 Speed MCN Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 144.0...146.0

1000 s: (141.0...149.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quaritity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : 30.04.92 **Edition**

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 854

Injection pump

Pump designation : PES6P120A720LS7114

-13

EP type number : 0 412 726 867

Governor

Governor design. : RQ300/1050PA911

Governer no. : 0 421 801 476

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : CM/47 LA

: 257.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

Phasing : 9-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rom : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.8...6.2 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 800

Del.quantity : 229.0...234.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rom

Rack travel in mm: 20.0 Del.quantity cm3/: 229.0...233.0 1000 s: (226.0...236.0) Testing: Spread cm3 : 8.001st rack travel in: 12.70 1000 s: (12.0) rpm : 1095...1110 Aneroid pressure h: 1500 Speed 2nd rack travel in: 4.00 Speed rpm : 800 Del.quantity cm3/: 244.0...247.0 1000 s: (241.0...250.0) Speed rpm : 1150...1180 4th rack travel in: 1300 rpm : 0.00...1.50 Speed cm3 : 8.00Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: -: 500 Setting point w/out bumper spring Speed rpm Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) rpm : 300 Speed Rack travel in mm: 6.0 Speed rpm : 300 Rack travel in mm : 5.80...6.20 cm3 : 8.00Spread 1000 s: (12.0) Rack travel in mm : 2.00 Speed : 360...400 (TOM BREAKAWAY TORQUE CONTROL Dimension a mm : 0.40 1st version : 1050 2nd speed rpm 1mm rack travel less than Rack travel in m: 13.60...13.80 3rd speed rpm : 700 full load rack tr: 12.70 Rack travel in m: 14.10...14.30 rpm : 1095...1110 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test : 100 Speed **MCJ** 1st version Del.quantity cm3/: 240.0...260.0 Setting 1000 s: (236.0...264.0) Speed : 600 man. hPa : 800 Pressure Remarks: Rack travel mm : 13.60...13.80 . Measurement * Increase in control-rod travel with 1/min: 600 Speed respect to setting at least 0.1 mm 1st pressure hPa : 300 Rack travel in m: 11.20...11.40 2nd pressure hPa : 600 Rack travel in m: 13.10...13.30 3rd pressure hPa : 1000 Rack travel in m: 13.70...13.80 ★ 4th pressure hPa : 1100 Rack travel in m: 13.90...14.10 5th pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm : 1059

M10

Note remarks

Test sheet

: 30.04.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 855

Injection pump

Pump designation : PES6P120A720LS7176

-10

EP type number : 0 412 726 869

Governor

Governor design. : RQ300/1050PA897

: 0 421 801 452 Governer no.

Customer-spec, information

Customer : DAIMLER-BENZ

Engine : 0M447 A

: 213.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasina

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm : 600 1st_speed

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.0...6.4 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.6 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 650 Speed rpm

Rack travel in mm : 20.0 Testina: 1st rack travel in: 12.50 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rum : 1160...1190 Speed 4th rack travel in: 1250 Speed rom : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rom : 300 Rack travel in mm: 6.2 Testina: Speed rpm : 200 Minimum rack trave: 7.70 rpm : 300 Rack travel in mr.: 6.00...6.40 Rack travel in mm: 2.00 rpm : 380...420 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.50...13.70 2nd speed rpm : 750 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 man Pressure hPa : 680 Rack travel mm : 14.10...14.30 Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 12.40...12.60 2nd pressure hPa : 400 Rack travel in m: 13.10...13.30 3rd pressure hPa : 800 Rack travel in m: 14.20...14.30 * 4th pressure hPa : -Rack travel in m: 11.30...11.60

1st version Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/ : 193.0...195.0 1000 s: (190.0...198.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1200 Speed rpm : 750
Del.quantity cm3/ : 218.0...222.0
1000 s: (215.0...225.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 144.0...146.0 1000 s: (141.0...149.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.50 rom : 1095...1110 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB

Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 858

Injection pump

Pump designation : PES6P120A720LS7181

-10

EP type number : 0 412 726 870

Governor

Governor design. : RQ300/1050PA911-1

Governer no. : 0 421 801 431

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M447 LA

1st version kW : 294.0

Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.20...15.40

Del.quantity cm3/: 27.4...27.6

100 s: (27.1...27.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.8...6.2

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

peed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 274.0...276.0 1000 : (271.0...279.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Del.quantity cm3/: 269.0...272.0 1000 s: (266.0...275.0) Testing: cm3 : 8.00Spread 1st rack travel in: 13.90 1000 s: (12.0) rpm : 1095...1110 Aneroid pressure h: 1600 Speed 2nd rack travel in: 4.00 Speed rpm : 700 Del.quantity cm3/: 298.0...301.0 riom : 1150...1180 Speed 4th rack travel in: 1300 1000 s: (295.0...304.0) riom : 0.00...1.50 cm3 : 8.00 Speed Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: -: 500 Setting point w/out bumper spring Speed rpm Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) rpm : 300 Speed Rack travel in mm: 6.0 rpm : 300 Speed cm3 : 8.00Spread Rack travel in mm: 5.80...6.20 Rack travel in mm: 2.00 1000 s: (12.0) riom : 370...410 Speed BREAKAWAY TORQUE CONTROL Dimension a mm : 0.50 1st version 2nd speed rpm : 1050 Reck travel in m: 14.90...15.10 1mm rack travel less than 3rd speed rpm : 850 full load rack tr: 13.90 Rack travel in m: 15.60...15.80 Speed rpm : 1095...1110 Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test : 100 Speed rom . 1st version Del.quantity cm3/: 250.0...270.0 Setting 1000 s: (246.0...274.0) : 600 Speed man Pressure hPa : 1000 Remarks: Rack travel mm : 15.20...15.40 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.90...11.10 2nd pressure hPa : 700 Rack travel in m: 14.00...14.20 3rd pressure hPa : 1300 Rack travel in m: 15.40...15.60 4th pressure hPa : 1450 Rack travel in m: 15.90...16.10 5th pressure hPa : -Rack travel in m: 10.00...10.50 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 rpm : 1050 Speed

Note remarks

Test sheet

: 30.04.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 860

Injection pump

Pump designation : PES6P120A720LS7161

-10

EP type number

: 0 412 726 868

Governor

Governor design. : RQV300...1050PA940-3

Governer no. : 0 421 813 827

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M/47 A

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rom : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm: 6.3...6.7

Deliguantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.6 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm

: 1.10...1.30 2nd speed

rpm : 600 : 4.90...5.10 travel mm

3rd speed rpm : 800

: 5.90...6.20 travel mm

rpm : 1100 4th speed

: 8.10...8.50 travel mm

: 1175 5th speed rpm

: 9.70...10.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1085 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rom : 600 Speed Aneroid pressure h: 681 : 201.0...203.0 Cel.quantity 1000 : (198.0...206.0) Spread cm3: 5.00 1000 : (9.00) RATED SPEED 1st version Setting point: Speed : 1085 LOU Rack travel in mm: 16.5 Testing: 1st rack travel in: 12.50 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1250 rom : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 82...90 Testina: : 200 Speed COM Minimum rack trave: 8.60 nom : 300 Speed Rack travel in mm : 6.30...6.70 CONSTANT REGULATION rom : 300...450 Speed TORQUE CONTROL : 1.20 Dimension a mm 2nd speed nom : 1050 Rack travel in m: 13.50...13.70 3rd speed rpm : 750 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 680 Rack travel mm : 14.10...14.30 Measurement $1/\min : 600$ Speed 1st pressure hPa : 300

Rack travel in m: 12.40...12.60

2nd pressure hPa : 400 Rack travel in m: 13.10...13.30 3rd pressure hPa : 800 Rack travel in m: 14.20...14.30 * 4th pressure hPa : -Rack travel in m: 11.30...11.60 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 1050 Speed mqn Del.quantity cm3/: 193.0...195.0 1000 s: (190.0...198.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1200 Speed rpm : 750 Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.50 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 170.0...190.0 1000 s: (166.0...194.0) Remarks: * Increase in control-rod travel with

respect to setting at least 0.1 mm

Note remarks

Test sheet : MB

Edition : 30.04.92

Replaces :-

Test oil : 180-4113

Combination no. : 0 402 746 831

Injection pump

Pump designation : PES6P120A720LS7195

-10

EP type number : 0 412 726 871

Governor

Governor design. : R0300/1100PA805-1

Governer no. : 0 421 801 505

Customer-spec. information

Customer : MERCEDES-EE Z

Engine : 0M447hA

1st version kW : 206.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Cverflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)
Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

Fime to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.8...6.2

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

speed rpm: 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 750

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.40 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 5.9 Testing: Speed rpm : 100 Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mr.: 5.80...6.00 Rack travel in mm: 2.00 Speed : 380...420 mon. Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed nom Pressure hPa : -: 8.80...9.00 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 250 Rack travel in m: 8.90...9.20 2nd pressure hPa : 500 Rack travel in m: 11.50...11.70 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 : 600 Speed rpm Del.quantity cm3/: 192.0...195.0 1000 s: (188.0...198.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 129.0...131.0

1000 s: (126.0...134.0)

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

Note remarks

Test sheet

: 21.09.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 913

Injection pump

Pump designation : PES6P12OA720LS7237-1

: 0 412 726 872 EP type number

Governor

Governor design. : RQ300/1100PA10G8-1

Governer no. : 0 421 801 592

Customer spec. information

Customer : MERCEDES-BENZ

: 0M447 hA Engine

1st version kW : 184.0

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length im

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed mpm: 600

Rack travel in mm : 12.00...12.20

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.5...7.1 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 500

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed mqr: Rack travel in mm: 20.0

Testina: 1st rack travel in: 12.20 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: : 200 Speed LDW. Minimum rack trave: 8.30 rpm : 300 Rack travel in mm : 6.20...6.80 Rack travel in mr: 2.00 rpm : 370...410 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 LDW. hPa : 500 Pressure : 12.00...12.20 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.70...11.90 2nd pressure hPa : 700 Rack travel in m: 12.10...12.30 * 3rd pressure hPa : 1100 Rack travel in m: 12.80...13.00 4th pressure hPa : -Rack travel in m: 11.70...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 1100 Speed rpm Del.quantity cm3/: 193.0...196.0 1000 s: (190.0...199.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1400 Speed

: 800

cm3 : 8.00

1000 s: (12.0)

1000 s: (192.0...202.0)

rom Del.quantity cm3/: 195.0...199.0 Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed : 100 rpm Del.quantity cm3/: 60.0...80.0 1000 s: (56.0...84.0) Rack travel in mm : 11.70...12.10

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Spread

Note remarks

Test sheet ·MB

Edition : 30.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 916

Injection pump

Pump designation : PES6P120A720LS7237

-10

EP type number : 0 412 726 872

Governor

Governor design. : RQ300/1100PA1010 : 0 421 801 596 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 hA

1st version kW : 184.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test Lines

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm: 12.00...12.20

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.8...6.4 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rom : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 500

: 161.0...163.0 Del.quantity

1000 : (158.0...166.0) : 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed חסח

Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.20

Speed rpm : 1145...1160

2nd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

: 300 rpm Rack travel in mm : 6.1

Testina:

Speed rpm : 200

Minimum rack trave: 8.00

Speed rpm : 300 Rack travel in mr: 5.80...6.40

Rack travel in mm: 2.00

: 390...430 Speed COM

Aneroid/Altitude Compensator Test

1st version

Settina

: 600 Speed nom

hPa : 500 Pressure

: 12.00...12.10 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : 300

Rack travel in m: 11.70...11.90

2nd pressure hPa : 700

Rack travel in m: 12.10...12.30 *

3rd pressure hPa : 1100

Rack travel in m: 12.80...13.00

4th pressure hPa : -

Rack travel in m: 11.70...12.00

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

Lbus : 1100

Del.quantity cm3/: 193.0...196.0

1000 s: (190.0...199.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1400

rpm : 800 Speed

Del.quantity cm3/: 195.0...199.0

1000 s: (192.0...202.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: Speed

rpm : 500 Del.quantity cm3/: 139.0...141.0

1000 s: (136.0...144.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 210.0...230.0

1000 s: (205.0...234.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB

Edition : 21.08.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 917

Injection pump

: PES6P120A720LS7238 Pump designation

-10

EP type number : 0 412 726 873

Governor

Governor design. : RQ300/1100PA1010-1

Governer no. : 0 421 801 597

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M447 hLA Engine

1st version kW : 220.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.70...13.90

Del.quantity cm3/: 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 6.2...6.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rom : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

: 205.0...207.0 Del.quantity

1000 : (202.0...210.0)

Spread

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.30 Speed rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1245...1275 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.3 Testing: rpm : 200 Streed Minimum rack trave: 8.20 rpm : 300 Rack travel in mr.: 6.00...6.60 Rack travel in mm : 2.00 rpm : 370...410 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed **CDM** : 600 Pressure hPa : 600 Rack travel mm : 13.70...13.90 Measurement 1/min: 600 Speed 1st pressure hPa : 150 Rack travel in m: 11.50...11.70 2nd pressure hPa : 350 Rack travel in m: 13.00...13.20 3rd pressure hPa : 800 Rack travel in m: 13.80...14.00 * 4th pressure hPa : 950 Rack travel in m: 14.20...14.40 5th pressure hPa : -Rack travel in m: 11.00...11.20 START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

rpm : 1100

1000 s: (218.0...227.0)

Del.quantity cm3/: 221.0...224.0

Aneroid prescure h: 1400

Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quaritity cm3/: 140.0...142.0 1000 s: (137.0...145.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.30 rpm : 1145...1160 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Speed

1st version

Note remarks

Test sheet : MB

Edition : 30.04.92

Replaces Test oil

: ISO-4113

Combination no. : 0 402 746 913

Injection pump

Pump designation : PES6P120A720LS7238

-10

EP type number : 0 412

: 0 412 726 873

Governor

Governor design. : RQ300/1100PA1013

Governer no. : 0 421 801 599

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M447 hLA

1st version kW : 220.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)
Rack travel in mm : 20.00...21.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 21.3...21.5

100 s: (21.0...21.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.6 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 600

Del.quantity : 213.0...215.0 1000 : (210.0...218.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.60 Speed rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1230...1260 Speed 4th rack travel in: 1350 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 riom Rack travel in mm: 6.3 Testing: Speed rpm : 200 Minimum rack trave: 8.20 rpm : 300 Rack travel in mr: 6.00...6.60 Rack travel in mm : 2.00 Speed npm : 380...420 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 morn. Pressure hPa : 600 Rack travel mm : 14.00...14.20 Measurement Speed 1/min : 600 1st pressure hPa : 200 Rack travel in m: 12.20...12.40 2nd pressure hPa : 400 Rack travel in m: 13.60...13.80 3rd pressure hPa : 800 Rack travel in m: 14.20...14.40 4th pressure hPa : -Rack travel in m: 11.50...11.80 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 rpm : 1100 Del.quantity cm3/: 229.0...232.0

1000 s: (226.0...235.0)

cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: 1400

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.60 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

Spread

Note remarks

Test sheet : MB

: 30.04.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 919

Injection pump

Pump designation : PES6P120A720LS7237

-10

: 0 412 726 872 EP type number

Governor

Governor design. : RQ300/1100PA1013-1

: 0 421 801 603 Governer no.

Customer-spec. information

Customer : MERCEDES-EENZ

: 0M447 hA Engine

: 184.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm: : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.00...12.20

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.6...6.2 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 550

Del.quantity : 163.0...165.0

1000 : (160.0...168.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed L DUU

Rack travel in mm: 20.0 Speed rpm : 800 Del.quantity cm3/: 203.0...207.0 Testina: 1000 s: (200.0...210.0) 1st rack travel in: 12.30 Spread cm3 : 8.00rpm : 1145...1160 1000 s: (12.0) Speed 2nd rack travel in: 4.00 Aneroid pressure h: rpm : 1220...1250 rpm : 500 Speed 4th rack travel in: 1300 Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) Speed rpm : 0.00...1.50 Spread cm3 : 8.00 LOW IDLE 1 1000 s: (12.0) Setting point w/out bumper spring Speed : 300 rpm Rack travel in mm: 5.9 **BREAKAWAY** l'esting: ist version Speed rpm : 200 1mm rack travel less than Minimum rack trave: 7.80 Speed full load rack tr: 12.30 rpm : 300 Rack travel in mr.: 5.60...6.20 Speed rpm : 1145...1160 Rack travel in mm : 2.00 Speed : 370...410 STARTING FUEL DELIVERY COM Aneroid/Altitude Compensator Test Speed : 100 rpm Del.quantity cm3/: 200.0...220.0 **1000** s: (196.0...224.0) 1st version Setting Remarks: : 600 Speed **FOR** Pressure hPa : 550 Rack trave! mm : 12.00...12.20 Measurement Speed $1/\min : 600$ 1st pressure hPa : 300 Rack travel in m: 11.60...11.80 2nd pressure hPa : 800 Rack travel in m: 12.20...12.40 3rd pressure hPa : 1100 Rack travel in m: 12.60...12.80 4th pressure hPa : -Rack travel in m: 11.40...11.70 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1700 rpm : 1100 Speed Del.quantity cm3/: 199.0...202.0 1000 s: (196.0...205.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1700

Note remarks

Test sheet : MB : 30.04.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 923

Injection pump

Pump designation : PES6P120A720LS7237

-10

EP type number : 0 412 726 872

Governor

Governor design. : RQ300/1100PA1013-2

Governer no. : 0 421 801 611

Customer-spec. in formation

Customer : MERCEDES-BENZ

Engine : 0M647 hA

1st version kW : 184.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.20

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 500

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Speed rpm : 800 Del.quantity cm3/ : 195.0...199.0 1000 s: (192.0...202.0) Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.20 cm3 : 8.00 Spread rpm : 1145...1160 Speed 1000 s: (12.0) 2nd rack travel in: 4.00 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 139.0...141.0 1000 s: (136.0...144.0) rom : 1220...1250 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed cm3 : 8.00 Spread LOW IDLE 1 1000 s: (12.0) Setting point w/out bumper spring : 300 L DU Rack travel in mm: 5.9 BREAKAWAY Testina: 1st version : 200 Speed rpm 1mm rack travel less than Minimum rack trave: 7.80 rpm : 300 full load rack tr: 12.20 Rack travel in mr.: 5.60...6.20 Speed rpm : 1145...1160 Rack travel in mm: 2.00 Speed : 370...410 PDM STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test Speed : 100 rpm Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) 1st version Setting Remarks: : 600 Speed nom Pressure hPa : 500 : 12.00...12.20 Rack travel mm * Increase in control-rod travel with respect to setting at least 0.1 mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.70...11.90 2nd pressure hPa : 700 Rack travel in m: 12.10...12.30 3rd pressure hPa : 1100 Rack travel in m: 12.80...13.00 4th pressure hPa : -Rack travel in m: 11.70...12.00 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed rpm : 1100 Del.quantity cm3/ : 193.0...196.0 1000 s: (190.0...199.0) Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: 1400

Note remarks

: NAV Test sheet Edition : 16.08.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 945

Injection purpo

Pump designation : PES6P120A320LS7284

EP type number : 0 412 726 891

Governor

Governor design. : RQV350...1100PA1063K

: 0 421 815 348 Governer no.

Customer-spec, information Customer : NAVISTAR

Engine : DTA-531

: 205.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow.

quantity min. 1/h: 170...190

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 2.85...2.95 Prestroke mm : (2.80...3.00)

Rack travel in mm : 10.00...13.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st_speed rom : 1100

Rack travel in mm : 12.90...13.00

Del.guantity cm3/: 17.7...17.9

100 s: (17.4...18.2)

Spread cm3 : 0.5

100 s: (1.2)

rpm : 325.0 2nd speed

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 2.8...3.4

100 s: (2.6...3.6)

cm3 : 0.5Spread 100 s: (0.9)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed

rpm : 350 travel mm : 1.90...2.10

2nd speed rpm : 500

travel mm : 3.90...4.30

3rd speed rpm : 800

: 6.60...7.00 travel mm

rpm : 1100 4th speed

: 9.00...9.20 travel mm

: 1250 5th speed **mgn**

: 10.60...11.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 1500

Del.quantity : 1(1.5....182.5)

Spread

cm3 : 5.00 1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 60...68

Testina:

1st rack travel in: 11.90

rpm : 1150...1180 Speed

2nd rack travel in: 4.00

rpm : 1275...1285

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 17...25

Testing:

rpm Speed Minimum rack trave: 7.50 rom : 325 Speed

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

: 1100 1st speed rpm

Rack travel in m: 12.90...13.00

2nd speed rpm : 650

Rack travel in m: 12.40...12.60

3rd speed rpm : 500 Rack travel in m: 11.30...11.70

4th speed npm : 800

Rack travel in m: 12.50...12.70

Aneroid/Altitude

Compensator Test

1st version Setting

: 1100 Speed rpm Pressure hPa : 1500

Rack travel mm : 12.90...13.00

Measurement

1/min : 1100 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.70

2nd pressure hPa : 280

Rack travel in m: 10.30...10.40

3rd pressure hPa : 705

Rack travel in m: 11.90...12.30

START CUT-OUT

Speed

1/min: 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 800 Del.quantity cm3/ : 181.0...187.0 1000 s: (178.0...190.0)

cm3 : 8.00 Spread

1000 s: (12.0) Aneroid pressure h: -

rpm : 800 Speed

Del.quantity cm3/: 91.5...95.5 1000 s: (89.5...97.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1150...1180 Speed

STARTING FUEL DELIVERY

Speed **COT** : 100

Del.quantity cm3/: 125.0...165.0 1000 s: (120.0...180.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 28.0...34.0

1000 s: (26.0...36.0)

Spread cm3 : 5.00

1000 s: (9.00)

Remarks:

: NAVISTAR #1820266091

Start-of-delivery blocking at start of

delivery of cylinder no. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mmDelivery-valve spring pre-tension = 6.30...6.40 mm.

Permissible alteration from 6.00...6.70

Note remarks

Test sheet : NAV : 16.08.93 Edition Replaces : 04.93 Test oil : ISO-4113

: 0 402 746 946 Combination no.

Injection pump

Pump designation: PES6P120A320LS7284 EP type number : D 412 726 891

Governor

Governor design. : RQV350...1100PA1066K

Governer no. : 0 421 815 349

Customer-spec. information Customer : NAVISTAR

Engine : DTA-531

1st version kW : 222.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test ail

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 170...190

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, par: 22...24

: 2.85...2.95 Prestroke mm

: (2.80...3.00)

Rack travel in mm : 10.00...13.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rom: 1100 1st speed

Rack travel in mm : 13.80...13.90

Del.guantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

cm3 : 0.5Spread

100 s: (1.2)

rpm : 325.02nd speed Rack travel in mm: 6.6...6.8

Del.quantity cm3/: 2.8...3.4

109 s: (2.6...3.6) cm3 : 0.5

Spread 100 s: (0.9)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.90...2.10 travel mm

rpm : 500 2nd speed

: 3.90...4.30 travel mm

1008 : magn 3rd speed

: 6.60...7.00 travel mm

rpm : 1100 4th speed

: 9.00...9.20 travel mm

rpm : 1250 5th speed

: 10.60...11.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 1500 2nd pressure hPa : 330 : 199.5...201.5 Rack travel in m: 10.60...10.70 Del.quantity 1000 : (196.5...204.5) 3rd pressure hPa : 840 : 5.00 Rack travel in m: 12.40...12.70 cm3 Spread 1000 : (12.00) START CUT-OUT RATED SPEED 1/min : 280 (290) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 61...69 Testing: 1st version 1st rack travel in: 12.80 Aneroid pressure h: 1500 rpm : 1140...1170 Speed rpm : 800 Del.quantity cm3/: 198.5...204.5 2nd rack travel in: 4.00 rpm : 1275...1285 1000 s: (195.5...207.5) Speed 4th rack travel in: 1350 cm3 : 8.00 Spread rom : 0.00...1.001000 s: (12.0) Speed Aneroid pressure h: -LOW IDLE 1 rpm : 800 Speed Del.quantity cm3/: 91.5...95.5 Control lever position degrees: 15...23 1000 s: (39.5...97.5) Testina: : 275 Speed man **BREAKAWAY** Minimum rack trave: 7.50 : 325 חכרו 1st version Rack travel in mm : 6.60...6.80 1mm rack travel less than CONSTANT REGULATION full load rack tr: 12.80 nom : 325...520 rpm : 1140...1170 Speed Speed TORQUE CONTROL STARTING FUEL DELIVERY Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 13.80...13.90 2nd speed rpm : 650 Rack travel in m: 13.00...13.20 3rd speed rpm : 500 Rack travel in m: 12.20...12.60 LOW IDLE 4th speed rpm : 800 Speed rpm : 325
Rack travel in mm : 6.60...6.80
Del.quantity cm3/ : 28.0...34.0
1000 s: (26.0...36.0) Rack travel in m: 13.30...13.50 Aneroid/Altitude Compensator Test cm3 : 5.00 Spread 1000 s: (9.00) 1st version Setting Remarks: Speed : 1100 : NAVISTAR #1820267c91 rom hPa : 1500 Pressure Rack travel mm : 13.80...13.90 Start-of-delivery blocking at start of delivery of cylinder no. 1. Measurement 1/min: 1100 Speed Bow dimension: Sliding-sleeve position = 37.0 mm Delivery-valve spring pre-tension = 6.30...6.40 mm. 1st pressure hPa : -

Rack travel in m: 9.70...10.10



Note remarks

Test sheet : DEE 7.7 n Edition : 02.07.93 : 06.93 Replaces : ISO-4113 Test oil

Combination no. : 0 402 776 808

Injection pump

Pump designation : PES6P12UA72URS7223 EP type number : 0 412 726 843

Governor

Governor design. : RSV400...1050P0A547

Governer no. : 0 421 833 349

Customer-spec, information Customer : JOHN DEERE

Engine : 6101 H7010

1st version kW : 241.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 2 417 413 075

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

assembly : 1 688 901 101

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm : (3.50...3.70)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rom : 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 400.02nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 2.2...2.8

100 s: (2.0...3.0)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Ameroid pressure h: 1200

: 212.5...214.5 Del.quantity

1000 : (209.5...217.5)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testina:

1st rack travel in: 11.70

rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1155...1165 Speed

3rd rack travel in: 4.00

rpm : 1155...1185 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

: 400 LDW Rack travel in mm: 5.6

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

rpm : 400 Speed

Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.70...12.80

2nd speed rpm : 850

Rack travel in m: 13.20...13.40

Aneroid/Altitude Compensator Test

1st version Settina

Speed

; 500 COR

hPa : 1200 Pressure

Rack travel mm : 13.20...13.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 290

Rack travel in m: 11.30...11.40

3rd pressure hPa : 620

Rack travel in m: 12.50...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 850 Speed

Del.quantity cm3/: 222.0...228.0 1000 s: (219.0...231.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 137.5...141.5

1000 s: (135.5...143.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 85.0...125.0 1000 s: (80.0...130.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.00...6.20
Del quantity 177 Del.quantity cm3/: 22.5...28.5

1000 s: (20.5...30.5)

cm3 : 8.00

1000 s: (12.00)

Remarks:

Spread

Adjustment without torque-control E47014 spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

Test sheet : DEE : 16.08.93 Edition : 06.93 Replaces Test oil : ISO-4113

Combination no. : 0 402 776 809

Injection pump

Pump designation : PES6P120A720RS7255 EP type number : 0 412 726 881

Governor

Governor design. : RSV475...1000POA551

: 0 421 833 360 Governer no.

Customer-spec. information Customer : JOHN DEERE

Engine : 6101 ATO10

1st version kW : 221.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 079

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm

: (3.50...3.70)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 21.8...22.0

100 s: (21.5...22.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed mpm : 475.0 Rack travel in mm: 5.3...5.5

Del.quantity cm3/: 2.2...2.8

100 s: (2.0...3.0)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Preroid pressure h: 1200

: 218.0...220.0

: (215.0...223.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 41...49

Testing:

1st rack travel in: 11.30

rpm : 1050...1060 Speed

2nd rack travel in: 4.00

: 1120...1130 Speed rpm

3rd rack travel in: 4.00

rom : 1125...1155 Speed

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 21...29

Testing:

Speed : 100 non Minimum rack trave: 19.00

rpm : 475

Rack travel in mm : 4.80...5.00

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed **FDIT** hPa : 1200 Pressure

: 12.30...12.40 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 460

Rack travel in m: 10.60...10.70

3rd pressure hPa : 735

Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500

Del.quantity cm3/: 136.0...140.0

1000 s: (134.0...142.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30

rpm : 1050...1060 Speed

M11

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 85.0...125.0 1000 s: (80.0...130.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm: 475
Rack travel in mm: 5.30...5.50
Del.quantity cm3/: 22.0...28.0

1000 s: (20.0...30.0)

Spread cm3 : 8.00

1000 s: (12,00)

Remarks:

: JOHN DEERE # RE42303

Start-of-delivery blocking 8,75° after start of delivery of cylinder no. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Note remarks

Test sheet : DEE : 02.07.93 Edition Replacés : 06.93 Test oil : ISO-4113

Combination no. : 0 402 776 811

Injection pump

Pump designation : PES6P120A720RS7255 EP type number : D 412 726 881

Governor

Governor design. : RSV400...1050P0A547

-2

: 0 421 833 409 Governer no.

Customer-spec. information Customer : JOHN DEERE

: 6101 AF010 Engine

: 242.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 079

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm

: (3.50...3.70)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 400.02nd speed Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 2.4...3.0

100 s: (2.2...3.2)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500 Del.quantity : 225.5...227.5 1000 : (222.5...230.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.50

rpm : 1095...1105

2nd rack travel in: 4.00

rpm : 1150...1160 Speed

3rd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1250

rom : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 21...29

Setting point w/out bumper spring

non : 400 Rack travel in mm: 5.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.00 : 400 Speed

nom: Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 12.50...12.60

2nd speed npm : 750

Rack travel in m: 12.90...13.10

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 MON Pressure hPa : 1500

Rack travel mm : 12.90...13.10

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 620

Rack travel in m: 10.50...10.60

3rd pressure hPa : 1020

Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rom : 750 Del.quantity cm3/: 230.5...235.5 1000 s: (227.5...239.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 124.0...128.0

1000 s: (122.0...130.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 85.0...125.0

1000 s: (80.0...130.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 24.5...30.5

1000 s: (22.5...32.5)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

: JOHN DEERE # RE46179

Start-of-delivery blocking 8,75° after start of delivery of cylinder no. 1.

Starting/full-load transition speed

from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet : DEE
Edition : 02.07.93
Replaces : 06.93
Test oil : ISO-4113

Combination no. : 0 402 776 812

Injection pump

Pump designation : PES6P120A720RS7255 EP type number : 0 412 726 881

Governor

Governor design. : RSV400...1050P0A547

-3

Governer no. : 0 421 833 410

Customer—spec. ir.formation Customer : JOHN DEERE

Engine : 6101 AF010

1st version kW : 225.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 2 417 413 079

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65 : (3.50...3.70)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 2.6...3.2

100 s: (2.4...3.4)

Spread cm3 : 0.8 100 s: (1.2)

QUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050 Aneroid pressure h: 1500

Del.quantity : 206.0...208.0 1000 : (203.0...211.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testina:

1st rack travel in: 10.70

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

rpm : 1165...1175 Speed 3rd rack travel in: 4.00

Speed

rpm : 1165...1195

4th rack travel in: 1300

rom : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 23...31

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.1

Testina:

Speed rpm : 100 Minimum rack trave: 19.00

rpm : 400

Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050 Rack travel in m: 11.70...11.80

2nd speed rpm : 750

Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 **CDM** hPa : 1500 Pressure

Rack travel mm : 11.70...11.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 560

Rack travel in m: 10.40...10.50

3rd pressure hPa : 925

Rack travel in m: 11.60...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed rom : 750

Del.quantity cm3/: 213.0...219.0

1000 s: (210.0...222.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 125.0...129.0 1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 35.0...125.0

1000 s: (80.0...130.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 26.5...32.5

1000 s: (24.5...34.5)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: JOHN DEERE # RE42225

Start-of-delivery blocking 8,75° after start of delivery of cylinder no. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : DEE : 02.07.93 Edition Replaces : 06.93 Test oil : ISO-4113

: 0 402 776 815 Combination no.

Injection pump

Pump designation : PES6P120A720RS7255 : 0 412 726 881 EP type number

Governor

: RSV400...900P7A569 Covernor design.

: 0 421 833 418 Governer no.

Customer-spec. information Customer : JOHN DEERE

Engine : 6101 AFOIO

1st version kW : 285.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 079

Inlet press., bar: 1.50

Overflow

quaritity min. 1/h: 140...150

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x3.00x600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm

: (3.50...3.70)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 14.90...15.00

Del.quantity cm3/: 30.9...31.1

100 s: (30.6...31.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 400.0 2nd speed

Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 2.6...3.2

100 s: (2.4...3.4)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speೀವ rpm : 850

Del. quantity : 309.5...311.5

1000 : (306.5...314.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 14.10 Speed rpm : 895...905

2nd rack travel in: 4.00

rpm : 950...960 Speed

3rd rack travel in: 4.00

rpm : 965...995 Speed

4th rack travel in: 1050

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 29...37

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.0

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 5.40...5.60

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.10 Speed rpm : 895...905

STARTING FUEL DELIVERY

Speed : 100 CDM.

Del.quantity cm3/: 35.0...125.0 1000 s: (80.0...130.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 400

Rack travel in mm: 5.40...5.60 Del.quantity cm3/: 26.0...32.0 1000 s: (24.0...34.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: JOHN DEERE # RE42226

Start-of-delivery blocking 8,75° after start of delivery of cylinder no. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

APPLICATION

Generator

M7

Note remarks

Test sheet : DEE : 02.07.93 Edition Replaces : 06.93 Test oil : ISO-4113

Combination no. : 0 402 776 816

Injection pump

Pump designation : PES6P120A720RS7255

EP type number : 0 412 726 881

Governor

Governor design. : RSV400...1050P0A547

-4

: 0 421 833 419 Governer no.

Customer-spec. information Customer : JOHN DEERE

Engine : 6101 HF010

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 079

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

: 1 688 901 101 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x3.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke nm : (3.50...3.70)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 26.1...26.3

100 s: (25.8...,26.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.0 2nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 2.9...3.5

100 s: (2.7...3.7)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050Aneroid pressure h: 1500

: 261.5...263.5 Del.quantity 1000 : (258.5...266.5)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 12.70

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

rom : 1155...1165 Speed

3rd rack travel in: 4.00

Speed rpm : 1155...1185

4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 400 Rack travel in mm : 5.2

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

rpm : 400

Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13.70...13.80

2nd speed rpm : 850

Reck travel in m: 14.00...14.20

Aneroid/Altitude Compensator Test

1st version

Setting

Speed man : 500 hPa : 1500 Pressure

Rack travel mm : 14.00...14.20

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.70...9.90

2nd pressure hPa : 600

Rack travel in m: 10.90...11.00

3rd pressure hPa : 1060

Rack travel in m: 12.70...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed rpm : 850

Del.quantity cm3/: 276.0...282.0

1000 s: (273.0...285.0)

Aneroid pressure h: -

Speed rp* : 500 Del.quantity g : 132.5...135.5

100ú s: (130.5...138.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rom : 1095...1105

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 85.0...125.0 1000 s: (80.0...130.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 29.0...35.0

1000 s: (27.0...37.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: JOHN DEERE # RE46178 Start-of-delivery blocking 8,75° after

start of delivery of cylinder no. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet

Edition : 15,09,93

Replaces

Test oil : ISO-4113

Combination no. : 0 403 244 031

Injection pump

Pump designation : PES4MW100/720RS1513

EP type number : 0 413 204 011

Governor

Governor design. : RQV300...1300Mv125-3

: 0 420 083 260 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M364LA

1st version kW : 104.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5,20...5.30

: (5.15...5.35)

Rack travel in mm : 21.00

Firing order : 1- 3- 4- 2

Phasina : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.15...1.65 travel mm

2nd speed rpm : 413

travel mm : 2.25...2.75

rpm : 880 3rd speed

: 4.75...5.25 travel mm

rpm : 1354 4th speed

travet mm : 8.43...8.93

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

: 118.0...120.0 Del.quantity

1000 : (116.0...122.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 110...118 Testina: 1st rack travel in: 11.60 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1420...1450 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 72...80 Testing: : 200 Speed rpm Minimum rack trave: 6.00 rpm : 300 Rack travel in mm : 4.20...4.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed mon hPa : -Pressure Rack travel mm : 8.90...9.00 Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 500 Rack travel in m: 11.90...12.10 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.70 START CUT-OUT Speed 1/min: 180 (200) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 750 Del.quantity cm3/ : 111.5...114.5 1000 s: (109.0...117.0) cm3 : 5.00Spread 1000 s: (7.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

Spread cm3 : 3.501000 s: (5.50)

Remarks:

Speed

Aneroid pressure h: -

rpm : 500

Del.quantity cm3/: 43.0...45.0 1000 s: (41.0...47.0)

Note remarks

Test sheet : MB 3,0 t2 Edition : 08.09.93 Replaces : 06.84 : ISO-4113 Test oil

Combination no. : 0 403 245 025

Injection pump

Pump designation : PES5MW55/320RS16-1 : 0 413 255 989 EP type number

Governor

Governor design. : RW375/2200MW28-3 : 0 420 081 023 Governer no.

Customer-spec. information

Customer : MERCEDES BENZ

: 617 A - USA Engine

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 20...32

Prestroke mm : 2.10...2.20

: (2.05...2.25)

Rack travel in mm : 19.50...22.50 Firing order : 1- 2- 4- 5-

Phasing : 0-72-144-216-288

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom : 1000

Rack travel in mm : 13.5...13.6

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

Spread cm3 : 0.25

100 s: (0.30)

2nd speed rpm : 365

Rack travel in mm : 5.7...5.8 Del.quantity cm3/ : 1.0...1.1

100 s: (0.85...1.25)

cm3 : 0.5Spread

100 s: (1.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1733

Del.quantity : 51.5...52.5

1000 : (50.5...53.5)

: 2.50 : (3.00) Spread cm3 1000

SENSING-LEVER SETTING

Speed 1/min : 375 Contr.-rod trav.mm: -0.1

RATED SPEED

1st version

Control lever

position degrees: 69... 2nd rack travel in: 0..1 : 2950 Speed mq"

3rd rack travel in: 12.1...12.3

rpm : 2180 Speed

4th rack travel in: 2300...2320

rom : 11.2 Speed

5th rack travel in: 2620...2720

rpm : 4.00 Speed

LOW IDLE 1

Control lever Del.quantity cm3/ : 50.0...52.00 position degrees: 27...31 1000 s: (49.0...53.0) cm3 : 2.50Setting point w/out bumper spring Spread 1000 s: (3.00) Aneroid pressure h: 1067 rpm : 365 Speed Rack travel in mm: 5,7...5,8 Speed rpm : 1000 Del.quantity cm3/ : 41.0...43.0 Testing: Speed 1000 s: (40.0...44.0) rpm : 100 Minimum rack trave: 11.0 Spread cm3 : 2.50Speed rpm : 320 1000 s: (3.00) Maximum rack trave: 11.0 SET IDLE AUXILIARY SPRING STARTING FUEL DELIVERY Speed MON Rack travel in mm: 520...550 Speed rpm : 100 Del.quantity cm3/ : 55.0... 1000 s: (52.0...) : 1/MIN TORQUE CONTROL Torque control curve - 1st version Rack travel in mm : 20.50...21.50 rpm : 1000 1st speed Rack travel in m: 13.5...13.6 HIGH IDLE 2nd speed rpm : 1600 Rack travel in m: 13.1...13.3 1st version 3rd speed rpm : 2180 Aneroid pressure h: 1733 Rack travel in m: 12.1...12.3 Speed rpm : 2550 Del.quantity cm3/: 24.0...30.0 1000 s: (23.0...31.0) Aneroid/Altitude Compensator Test Spread cm3 : 2.50 1000 s: (3.00) 1st version LOW IDLE Setting Speed rpm : 1000 rpm : 365 Pressure hPa : 1400 Rack travel in mm : 5.70...5.80 Del.quantity cm3/: 10.0...11.0 1000 s: (8.50...12.5) Spread cm3: 0.50 Rack travel mm : 0.40...0.70 Measurement Speed 1/min : 1000 1000 s: (1.50) 1st pressure hPa : 1067 Remarks: Rack travel in m: 2.50...2.90 2nd pressure hPa : 747 Rack travel in m: 4.70...5.20 SETTING THE IDLE STAGE -Text supersedes the corresponding section in the test instructions. START CUT-OUT Control-lever position 69°. $1/\min: 260...310$ Drive pump at n = 1000 1/min. Screw Speed in spring retainer until control-rod travel 13.5...13.6 mm is obtained. FUEL DELIVERY CHARACTERISTICS 1st version Control-Lever position 49°. Drive pump at n = 1000 1/min.Aneroid pressure h: 1733 Speed rpm : 1600 Control-rod travel 8.8...mm must Del.quantity cm3/: 51.5...53.0 be obtained. 1000 s: (50.5...54.0) cm3 : 2.50 Spread 1000 s: (3.00) Section 4.3 of test instructions Aneroid pressure h: 1733 changes as follows:

Drive injection pump at n = 800 1/min.

Speed

rpm : 2180

Set control lever so that controlrod travel 1.0...1.3 mm is obtained. Control lever must be within allowable tolerance. Bring idle stop up against control lever and fix.

SETTING THE IDLE-SPEED AUXILIARY SPRING
-Set idle-speed auxiliary spring to contact up to n = 520...550 1/min.

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.
CHECKING OF SHUTOFF—Drive pump at n = 200 1/min.
—Overcome spring—loaded idle stop with control lever. Control—rod travel obtained may be max. 5 mm.

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Control-lever range idle to full load 38...42°.

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400
Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1733 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2,503...2,523 V must be displayed on the digital voltmeter.

RWG adjustment
At engine speed of 1000 1/min
set delivery rate of 27.5...28.5
ccm/1000 strokes with control
lever. Shift RWG until U =
1.755...1.775 V is indicated.
Tighten fastening screws to

1...2 Nm. Move control lever to full-load stop; voltage value of 2.503...2.523 V must be attained.

Note remarks

Test sheet

Edition

: 7.5.93

Replaces

Test oil

: ISO-4113

Combination no.

: 0 403 446 149

Injection pump

Pump designation : PES6MW100/720RS1114-

EP type number

: 0 413 406 111

GOVERNOR

Governer no.

Governor design. : RQV300...1300MW55

: 0 420 083 076

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: OM366LA

1st version kW

: 177.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 0008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1300

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 8.3...8.5

100 s: (8.1...8.7)

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed

Rack travel in mm: 7.8...7.9

Del.quantity cm3/: 1.0...1.4 100 s: (0.9...1.5)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : ?

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1330 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1300

: 83.0...85.0 Del.quantity 1000 : (81.0...87.0)

Spread : 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testina:

1st rack travel in: 10.40

Speed rpm : 1340...1350

2nd rack travel in: 4.00 rpm : 1430...1460 Speed 4th rack travel in: 1520 rom : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 78...86 Testing: Speed rpin : 100 Minimum rack trave: 8.70 rpm : 300 Speed Rack travel in mm : 7.80...7.90 TORQUE CONTROL Dimension a mm : 1.00 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 11.40...11.50 rpm : 750 2nd speed Rack travel in m: 12.40...12.50 rpm : 800 3rd speed Rack travel in m: 12.10...12.30 4th speed rpm : 900 Rack travel in m: 11.60...11.80 START CUT-OUT Speed 1/min: 180 (200) FUEL DELIVERY CHARACTERISTICS 1st version Speed mcn : 750 Del.quantity cm3/: 84.0...86.0 1000 s: (82.0...85.0) cm3 : 5.00Spread 1000 s: (7.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed : 100 הסמו Del.quantity cm3/: 80.0...90.0 1000 s: (77.0...93.0)

rpm : 300

Rack travel in mm : 7.80...7.90 Del.quantity cm3/ : 10.0...14.0 1000 s: (9.0...15.0) Spread cm3 : 3.50 1000 s: (5.00)

:

Remarks:

N26

Speed

LOW IDLE